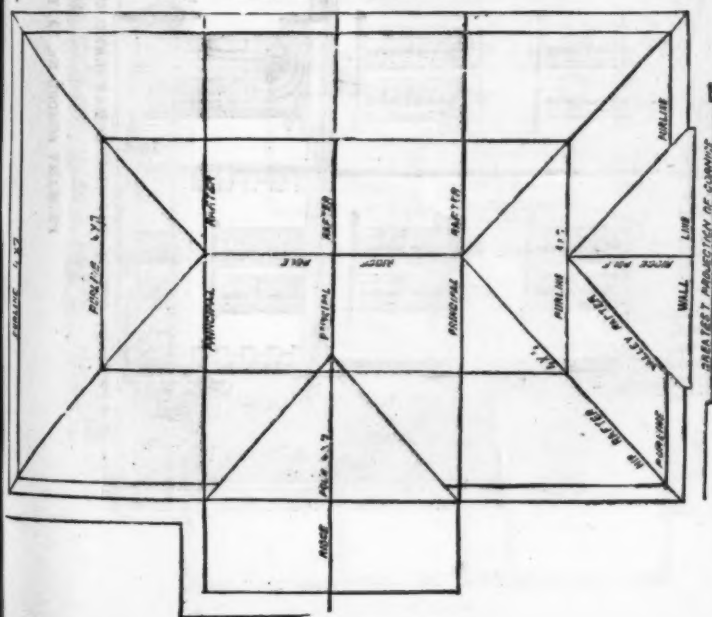
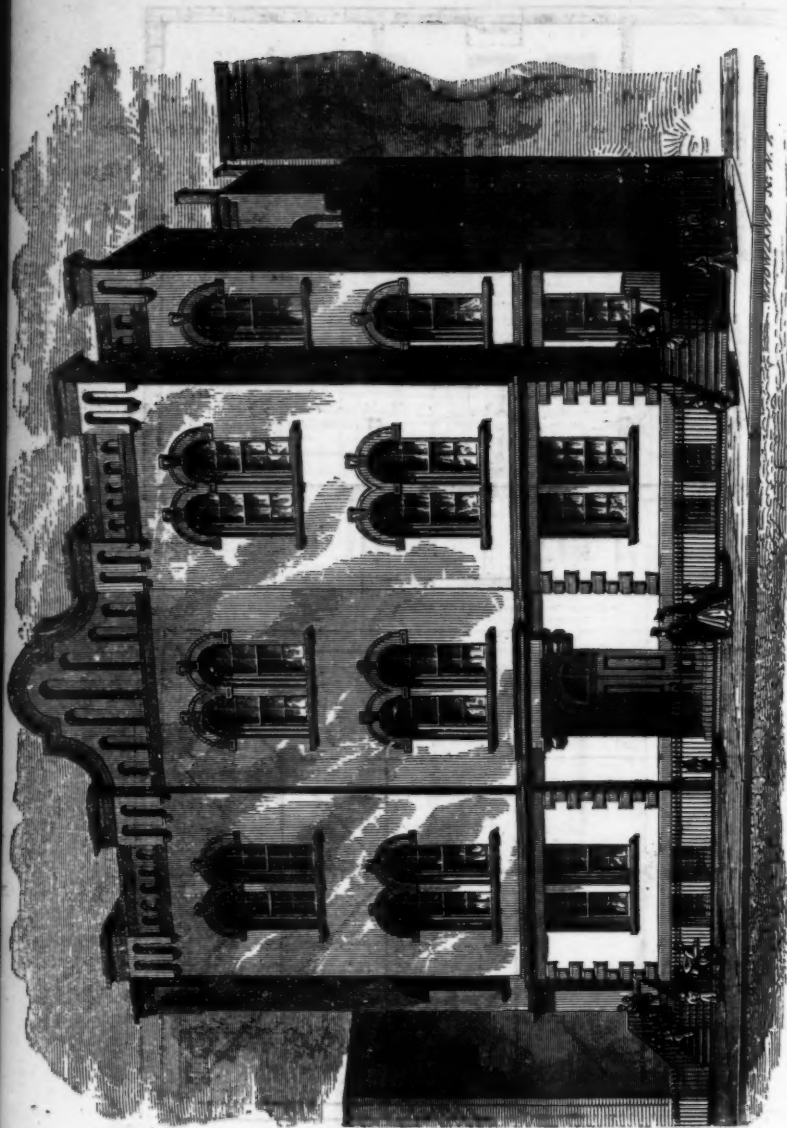


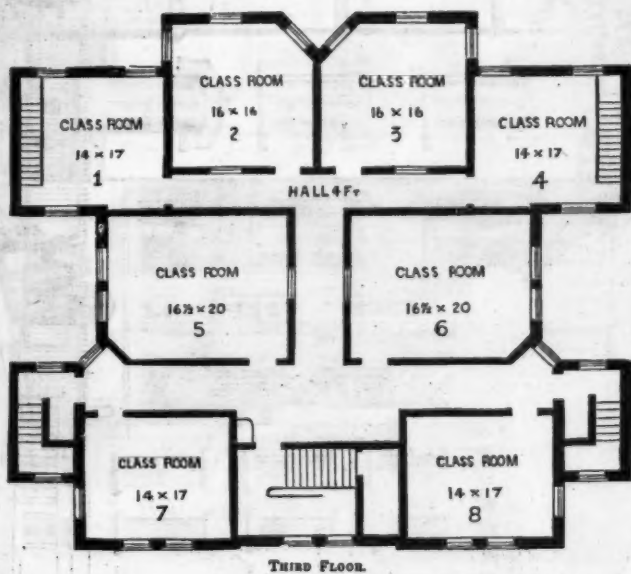
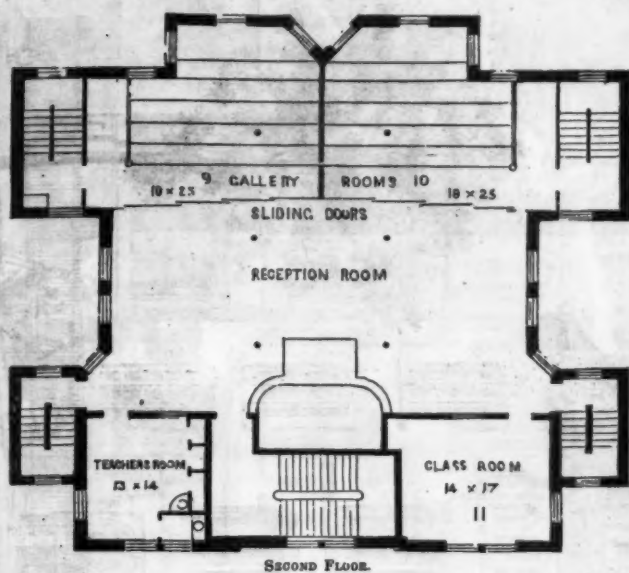
SECOND STORY - PRIMARY SCHOOL.

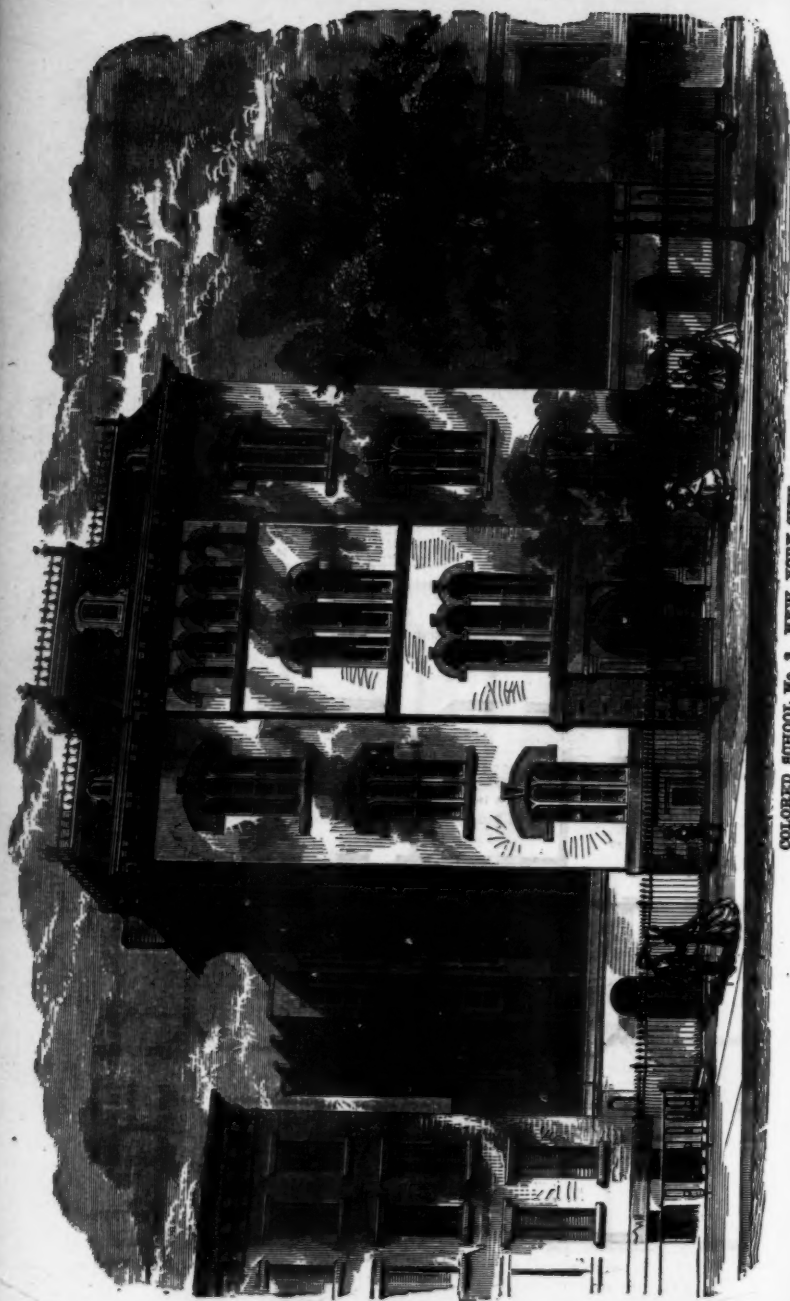


FRAMING OF ROOF - PRIMARY SCHOOL.

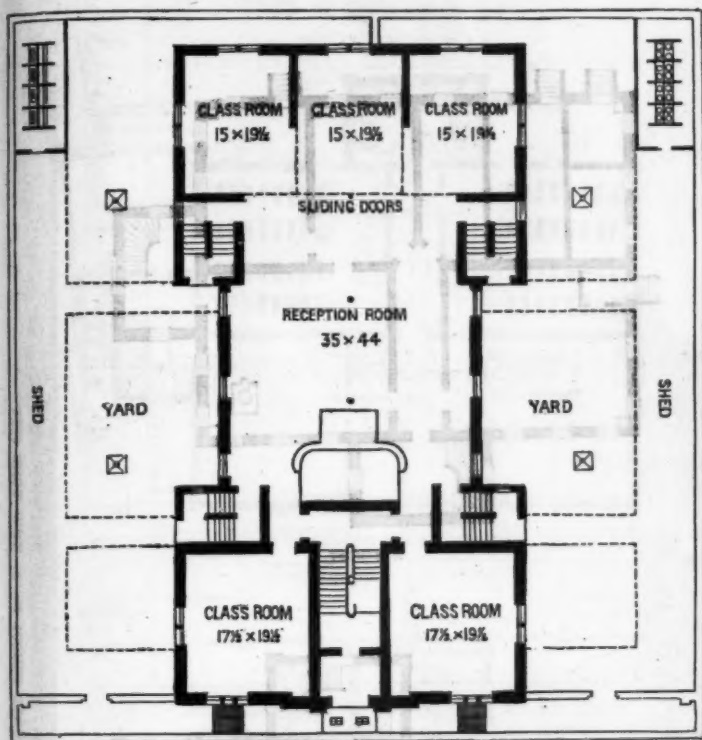


PRIMARY SCHOOL No. 12, FOURTH WARD, NEW YORK CITY.

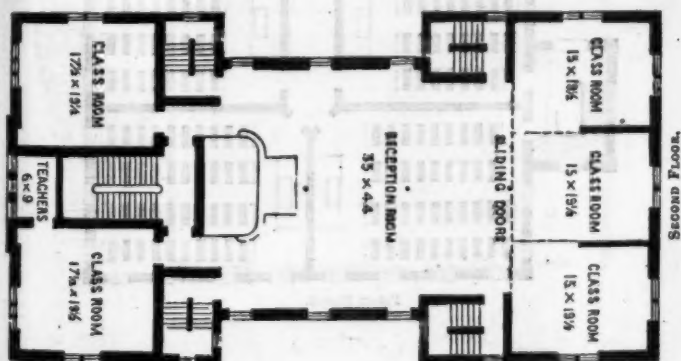




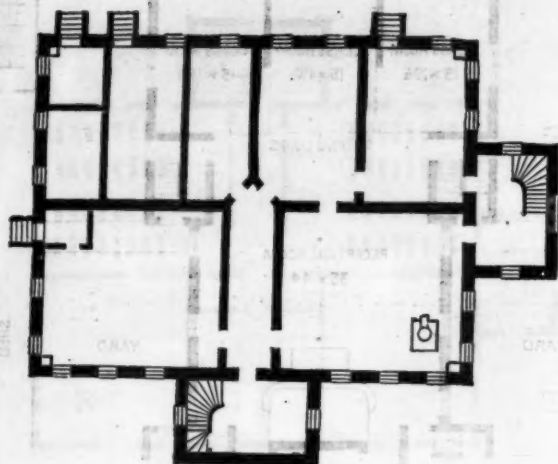
COLORED SCHOOL No. 3, NEW YORK CITY.



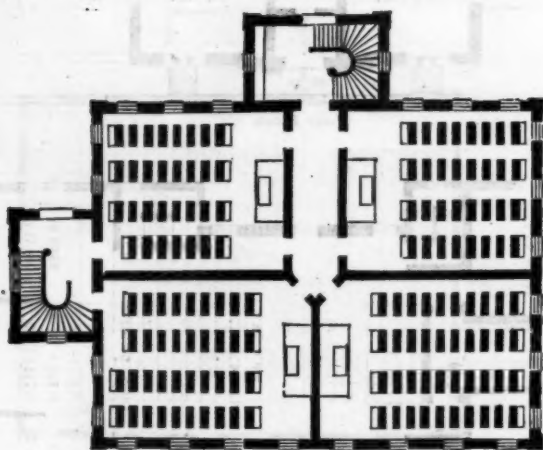
FIRST FLOOR.



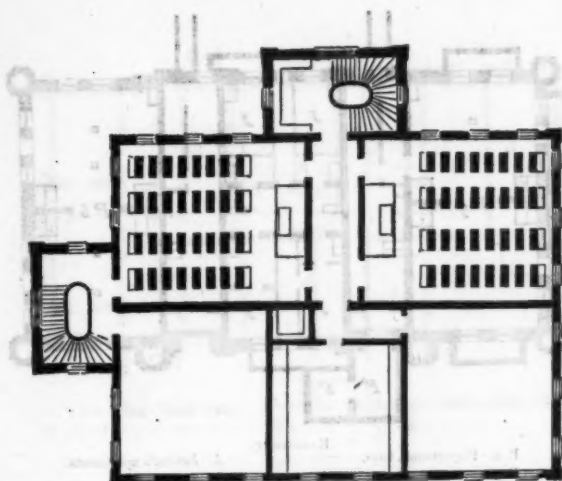
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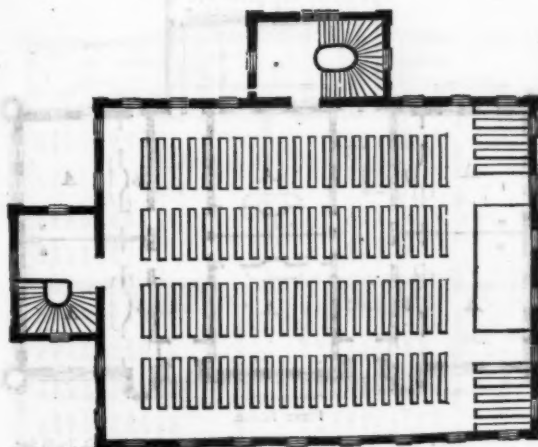
BASEMENT.



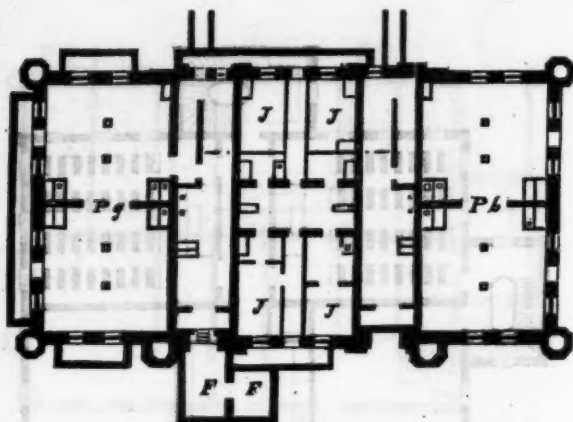
FIRST FLOOR.



SECOND FLOOR.



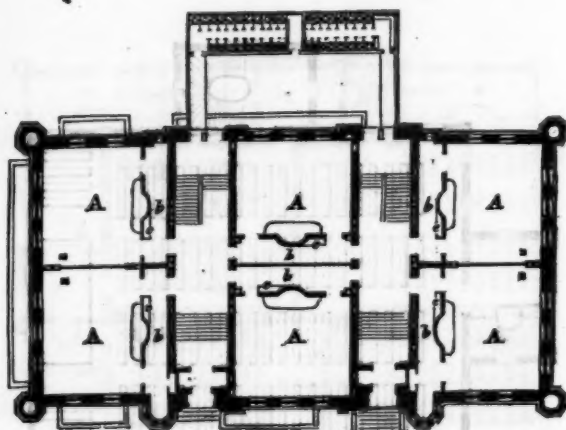
THIRD FLOOR.



P. g. Play-ground, boys.
P. g. " " girls.

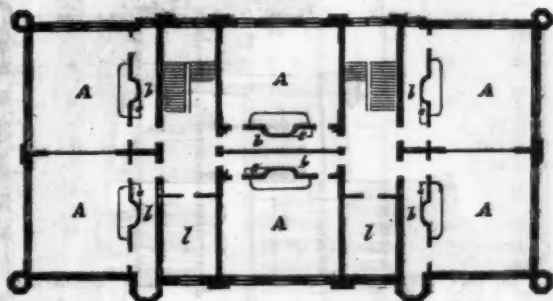
BASMENT.

J. Janitor's apartments.
F. Foot.



FIRST FLOOR.

A. Class-rooms, 37'x33 feet. B. Pupils' cloak room, 6 ft. 3'x33 feet.
C. Teachers' closets.



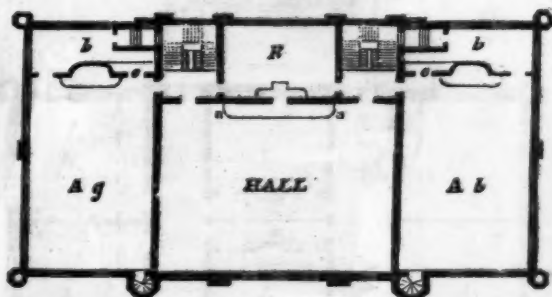
SECOND FLOOR.

A. Class rooms, 27x33 feet.

L. Library, 14 ft. 6 in. x 21 ft. 6 in.

a. Pupils' cloak rooms, 6 ft. 3 in. x 33 ft.

c. Teachers' closets.



THIRD FLOOR.

A. b. School-room, boys, 33 ft. 7x34.

R. Recitation room, 20 ft. 9x33.

A. g. " girls, 33 ft. 7x34.

a. Pupils' cloak rooms, 23 ft. 9x33 ft. 7.

Hall, 40x55.

c. Teachers' closets.



WALLACE SCHOOL, Washington, D. C.

THE NATIONAL EDUCATION DEMANDED BY THE AGE,

CONSIDERED IN CONNECTION WITH THE EDUCATIONAL SYSTEM OF FRIEDRICH FROBEL.

By Prof. J. H. Von Fichte.*

I. EDUCATION—THE PROBLEM OF THE AGE.

SINCE Pestalozzi's great movement, it has become, at least in Germany, a universally recognized conviction, that only by means of an improved popular education, can the many defects of civil, social and family life be thoroughly corrected, and a better future be assured to our posterity. It may be asserted, still more universally, that the fate of a people, its growth and decay, depend, ultimately and mainly, on the education which is given to its youth. Hence follows, with the same indisputable certainty, the next axiom: that nation which, in all its classes, possesses the most thorough and varied cultivation, will, at the same time, be the most powerful and the happiest, among the peoples of its century; invincible to its neighbors and envied by its contemporaries, or an example for them to imitate. Indeed, it can be asserted, with the exactness of a mathematical truth, that even the most reliable preparation for war can be most surely reached through the right education of physically-developed young men. This conviction also gains ground in Germany; and renewed efforts are now made to introduce gymnastics (*turnen*) into the system of common school education, freed from all cumbersome modifications, and restored to their simple, first principles.

But the problems of national education are far from being limited to these immediate, practical aims. Its workings must not alone cover the present and its necessities; the great plan of national education must comprehend unborn generations, the future of our race, the immediate and therefore the most distant. Finally, man must not be educated for the State alone (after the manner of Greece and Rome), but the highest civil and educational aim must be to lead the individual and the whole race toward their moral perfection. National education must therefore extend beyond the popular and expedient; must construct its foundations on pure and universal humanity, and then raise upon these whatever national and professional wants require. This gradation of requirements strictly held, will prove to be a guiding rule of great importance.

Here now, it may seem—and "idealizing educators" have frequently received such reproaches—as if in these demands, far off, impossible

* Translated by Emily Meyer, with slight verbal alterations and abridgements.

problems were treated of, as if educational utopias were desired, instead of looking after what is nearest and most necessary. And one could say, even with an appearance of right, that inasmuch as we perform what is near and sure, we approach, at least progressively, our highest goal. For national education is a work so comprehensive, complicated and prodigious, that it can be realized only in favorable periods and within very circumscribed limits.

Admitting this last, we hope still to show how directly practical the consideration of that universal question of principle is, and that the education of the present will only reach its aim by beginning at this point. We are undeniably entering a new era. We are preparing to cast aside the last remnants of the middle ages. Inherited rights are precarious, or at least they can claim no legal sanction, while, nevertheless, much in our manners and customs remind us of the past. No one is compelled to serve another, and no individual enjoys in idleness the profits of another man's labor; but for each, labor and capacity are to be the sole supports of his position in life. Thus each is thrown upon his own exertions, and the path of unlimited competition and zealous effort is opened to all.

For this reason there should no longer be a privileged class, but to each, approximately at least, must be offered every thing which belongs to a universal human culture, and what his particular capacities demand or are able to appropriate. Only upon these two conditions can the citizen of the commonwealth be fitted for the future "struggle for existence," to continue equal to the increased requirements, and fulfillably his chosen calling.

This new great principle of the equal rights of all to all which their talents can grasp, demands a plan of education fundamentally renovated and readjusted. In every given case, the education must be strictly proportional to the conditions which the period offers. But it can not be denied, that in the present period this proportional relation has not been reached; yes, there is even danger that it may be missed of, by a mistaken arrangement of details. For this reason, those upon whom the responsibility of educating rests, must recognize clearly the final aim of the same, and prepare it with practical certainty, through all the necessary grades. Above all, therefore, theoretically there must be no vacillation in principles, practically no failure in the correct issues! If we should succeed only in spreading a wholesome light over these two points, we should feel that we had solved our present problem.

Our politicians and State educators differ widely in regard to that aim; and this is the next ground where the struggle should begin. Whoever considers a republic the highest goal to which a State can attain, laments that he sees no republicans around him; these true education must make. But what the republican spirit, in which the people are to be educated, really is, there is no thorough insight. This spirit is the opposite of that which has till now existed, and which sees true freedom

only in a leveling equality, and the overthrow of old authority and social barriers; and above all admits no civil compulsion in education. Each individual must cultivate himself for such practical purposes as he chooses, and as well as he can. Education and its institutions must be entirely untrammelled. As a fitting example we can refer to what is related of North America, where the educational conditions, and the consequent family life, are free in general. The pupil is prepared, as early as possible, to help himself onward, in some form of profitable business. The greatest activity, and the richest accumulation of property, is the aim of each. Though German republicanism may reject these principles, it must still admit that there is consistency in them, and that if the State has no higher aim than to become a great industrial and fiscal institution, an immense phalanstery for the most enhanced pleasures of this mortal life, this purpose is being realized on the other side of the ocean, in a highly practical way, and without unnecessary complications; not, indeed, without already displaying the moral evils which unavoidably accompany its progress, and to which our republican sages persistently shut their eyes.

Those who find their ideal state in old feudalism, in simple submission to the fatherly care of "princes by the grace of God," and see in a full return to such conditions the only safety from the dangers of the present, must also contemplate a reform, indeed a retrograde movement, of the educational system. They will insist upon clinging to old things, even to preserving what is decayed, solely because it is consecrated by authority. Nor are we without example of this; for we find a North German State, betraying a lamentable inconsistency and blindness in settling the most important question of popular education, limits the range and thoroughness of instruction, and thus destroys the germs of its future growth as a State.

These two parties—we have mentioned only their extreme characteristics, while numerous intermediate grades exist—designate only the extreme limits of the antithesis, which touches all the political and social questions of the age. They stand upon the broad field of the literature and opinions of our time, as if separated by a wide chasm, and in irreconcilable hostility. They could, however, by returning to their first, true principles, and acquiring a clearer insight, be brought to recognize each other; and, instead of incessantly quarreling, be made to acknowledge their relative rights, and work harmoniously upon the common task of improving the education of the people. We consider it not only desirable, but possible, that the work of reconciliation should begin with a true appreciation of popular education, which is the common aim of both sides. By this we mean that the conservatives, who will sacrifice nothing which is sanctified by age and authority, do not see how, in thus destroying, that which is truly valuable and enduring can be preserved. For the new form in which it is to arise more enduringly, does not present itself so distinctly that they can recognize it. This gives

them a right to protest that it is better to retain the oldest positive form than sink into the nothingness of a bare negation; no new form should be introduced which is not at least a full compensation for the old.

On the other side, we see reformers too frequently losing themselves in what is external or unessential. They do not often get beyond empty plans of abolition. They are clear as to what they do not want, but do not perceive as clearly what is permanently to fill the place of that which they reject. They are deeply mistaken if they think, that, in ridding themselves of certain hindrances, they gain creative freedom, the power to erect a positive structure. We can not err, in asserting that most revolutions have failed and become unfortunately retrogressive, because their leaders did not know what they wanted, or at least what they ought to want.

In the first place, it is necessary to understand the past correctly, and to recognize clearly what in it has still a relative right to continue, and what must serve as a transitional basis and means for that which is new and necessary. The law of continuity, of gradual transition, which we see ruling organic life with irresistible sway, has also in all intellectual processes, whether political or social, its highest authorization, the violation of which never escapes punishment. We might call it the educational law of the world's history.

If we may be allowed to presume that, as a general thing, the best thinkers agree upon these fundamental principles, then we may consider the following inference as admitted. It is plain, namely, that the path of this gradual, complete, and peaceful transition from the present into the new period, must take place in the field of education; for in the growing race, the old and new time, the decaying past and vigorously-developing future, meet and are reconciled. And thus in this direction, the decisive truth is proved:

All political and social controversies of the present concentrate finally in the question of education; but not only in regard to what must be done in detail and immediately, but more universally still, in this: What is the only true education, the education worthy of the human being?

This is plainly a psychological-ethical question. It can be decided—with the permission of our practical teachers—only on philosophical ground. Not—and here experience must be our guide—not that a certain philosophical system is to construct for all time, an educational plan which all must follow, but that correct insight into the nature of the human intellect must first fix the nature and the end of all human education, and must at the same time designate the fundamental principles by which the several questions of education and instruction are to be decided. Thus we shall be able to dispose of the final question: Which one, of the now ruling educational systems, is best adapted to the nature of the human mind?

(To be continued.)

SECONDARY INSTRUCTION IN SCOTLAND

II. PRESENT CONDITION.

The Secondary schools of Scotland include the Burgh schools, Academies, and other institutions of a public character, with a complete and preparatory element in each. The Education Commissioners in their Third Report, submitted to Parliament in 1868, present the following summary view of the number, organization, and general condition of these schools, founded on the Report of two Assistant Commissioners, who made a personal inspection of the same, and of Mr. Fearon, an English Inspector, who examined some of the most prominent.

Kinds—Number—Constitution.

These schools, while they include elementary classes, and in some instances begin with the rudimentary instruction, continue the education of children of the middle classes to the close of the sixteenth year, and until the pupils go to the University or into business. They are divided into three classes.

First, There are *Burgh schools* the leading characteristic of which is, that they are subjected to the regulation and control of the authorities of the Burghs as such,* and are open to the community. As examples of the Burgh school proper, we may refer to the High schools of Glasgow and Edinburgh. It should be observed, however, that in some cases where the population is small, the Parochial school discharges the functions of a Burgh school also, and is then termed a *Burgh and Parochial School*.

Secondly, There are *Academies*, or *institutions*, both in Burghs and out of Burghs. Generally these establishments have been founded by subscription, as supplementary to the Burgh schools, and are managed by directors selected from the subscribers. Of these the Edinburgh Academy may be taken as a specimen. In some cases, however, these Academies or Institutions have been either partially or wholly amalgamated with the Burgh school. In case of partial amalgamation, as at Ayr, the effect is to add a *proprietary* element to the ancient Burgh foundation. In case of complete amalgamation, as in the instance of the Madras College, St. Andrews, the ancient Public school is merged in the new Institution, the Town Council having transferred the schoolhouse and garden to the newly appointed trustees.

But besides Public, there are (*thirdly*) *Private Secondary schools* which are of various kinds. Some of these are exclusively Boarding schools, such as Merchiston; some are exclusively Day-schools, such as the Edinburgh Institution, or a mixture of both, as in the case of the Gymnasium at Aberdeen. But their characteristic is that they are private property, maintained and conducted as private speculations.

* There are fourteen districts of *Parliamentary Burghs* in Scotland, containing 69 Burgh towns, besides the large Parliamentary Burghs of Aberdeen, Dundee, Edinburgh, Glasgow, Greenock, Paisley and Perth, which are not included in any district of Burghs, and three *Royal Burghs*, Peebles, Rothesay and Selkirk, which till 1832 had a Parliamentary representation. This makes 79 Burghs, Parliamentary and Royal.

PUBLIC INSTRUCTION IN SCOTLAND.

III. SUPERIOR INSTRUCTION.

The four Universities by which Superior Instruction is dispensed are organized as follows:

University of St. Andrews, 1411.

Chancellor, Duke of Argyll, LL.D., K.T.; *Vice-Chan.*, Principal Tulloch, D.D.; *Rector*, James Anthony Froude, LL.D.; *Senior Prin.*, Principal Tulloch, D.D.; *Dean of Fac. of Arts*, Prof. Baynes, LL.B.; *Rep. in Parl.*, Lyon Playfair, C.B.; *Librarian*, B. Walker; *Registrar*, Robert Walker.

COLLEGE OF ST. SALVATOR AND ST. LEONARD.
Principal, J. C. Shairp, M.A.

PROFESSORS.

Humanity, John C. Shairp, M.A.
English Literature, Thomas S. Baynes.
Greek, Rev. Lewis Campbell, M.A.
Mathematics, W. L. F. Fisher, M.A., F.R.S.
Logic, Thomas Spencer Baynes, LL.B.
Moral Philosophy, Robert Flint.
Natural Philosophy, Wm. Swas, F.R.S.E.
Natural History, W. McDonald, M.D.
Civil History, W. McDonald, M.D.
Anatomy & Medicine, Oswald H. Bell, M.D.
Chemistry, M. Foster Heddle, M.D.
Clerk & Factor, Stuart Grace.

COLLEGE OF ST. MARY.

Principal, John Tulloch, D.D.

PROFESSORS.

Systematic Theology, John Tulloch, D.D.
Biblical Criticism & Theology, F. Crombie, D.D.
Exegetical History, A. F. Mitchell, D.D.
Oriental Languages, John McGill, LL.D.
Secretary & Factor, S. Grace.

University of Aberdeen, 1484.

Chancellor, Duke of Richmond; *Vice-Chan.*, Principal Campbell; *Rector*, M. E. Grant-Duff, M.P.; *Principal*, P. C. Campbell, D.D.; *Assessors*, J. Webster, Adv.; W. Neame, D.D.; A. Kilgour, M.D.; Rev. Prof. Pirie, D.D.; *Rep. in Parl.*, E. S. Gordon; Sec., W. Milligan, D.D.; *Libr.*, Rev. John Fyfe, A.M.

PROFESSORS.

Greek, W. D. Geddes, A.M.
Humanity, John Black, M.A.
Logic, A. Bain, LL.D.
Mathematics, F. Fuller, M.A.
Moral Philosophy, W. Martin, LL.D.
Natural Philosophy, D. Thomson, M.A.
Natural History, J. Nicol.
Systematic Theology, S. Trail, D.D., LL.D.
Church History, W. R. Pirie, D.D.
Biblical Criticism, W. Milligan, D.D.
Oriental Languages.
Law, P. Davidson, LL.D.
Institutes of Medicine, G. Ogilvie, M.D.
Practice of Medicine, J. Macrobain, M.D.
Chemistry, J. S. Bevier.
Anatomy, John Struthers, M.D.
Surgery, W. Pirie, F.R.S.E.
Material Medica, R. Harvey, M.D.
Midwifery, A. Inglis, M.D.
Med. Jurisprudence, F. Ogston, M.D.
Botany, G. Dickie, M.D.

University of Glasgow, 1450.

Chancellor, Duke of Montrose, K.T.; *Vice-Chan.*, The Principal; *Rector*, Earl of Derby; *Dean of Faculties*, Sir Thos. E. Colebrooke, Bart., M.P.; *Principal*, Thos. Barclay, D.D.; *Rep. in Parl.*, Edward S. Gordon; *Clerk and Sec.*, Rev. Duncan H. Weir, D.D.

PROFESSORS.

Humanity, George G. Ramsay, M.A.
Greek, Edmund Law Lushington, M.A.

Mathematics, Hugh Blackburn, M.A.
Civil Eng. & Mechanics, Wm. J. M. Rankine, LL.D.
Logic, John Veitch, M.A.
Moral Philosophy, Edward Caird, B.A.
Natural Philosophy, Sir William Thomson, LL.D.
English Language and Literature, J. Nichol, B.A.
Astronomy, Robert Grant, LL.D.
Divinity, John Caird, D.D.
Church History, Thomas T. Jackson, D.D.
Biblical Criticism, W. F. Dickson, D.D.
Oriental Languages, Rev. D. H. Weir, D.D.
Law of Scotland, R. Berry, M.A.
Conveyancing, James Robertson, LL.D.
Material Medica, J. B. Cowan, M.D.
Chemistry, Thomas Anderson, M.D.
Surgery, George H. B. Macleod, M.D.
Practice of Medicine, William T. Cairdner, M.D.
Midwifery, William Leishman, M.D.
Anatomy, Allen Thomson, M.D.
Botany, Alexander Dickson, M.D.
Institutes of Medicine, A. Buchanan, M.D.
Forensic Medicine, Harry Rainy, M.D.
Natural History, John Young, M.D.
Waltonian Lec. Fys., Thomas Reid, M.D.
Keeper of Hunterian Museum, Prof. Young, M.D.
Librarian, E. B. Spence.
Clerk of Senate, Professor Weir, D.D.
Registrar, T. Moir.

University of Edinburgh, 1583.

Chancellor, John Inglis, Lord Justice General, D.C. L. LL.D.; *Rector*, Jas. Moncreiff, Lord Justice Clerk, LL.D.; *Vice-Chan. and Principal*, Sir A. Grant, LL.D., &c., &c.; *Rep. in Parl.*, Lyon Playfair, C.B., LL.D., F.R.S., &c., &c.; *Sec. of Sen.*, Prof. Wilson.

PROFESSORS.—Faculty of Arts.

Latin, William Y. Sellar, LL.D.
Greek, John Stuart Blackie, M.A.
Mathematics, Philip Kelland, M.A., F.R.S.
Logic, Rev. Alexander Campbell Fraser, M.A.
Moral Phil. & Polit. Economy, H. Calderwood, LL.D.
Natural Philosophy, Peter Guthrie Tait, M.A.
Rhetoric, David Masson, M.A.
Universal History, Cosmo Innes, M.A.
Astronomy, Charles Piazzi Smyth, F.R.S.
Agriculture, John Wilson, F.R.S.E.
Music, Herbert S. Osakeley, M.A.
Sanskrit, Theodor Aufrecht, M.A.
Engineering, Fiesching Jenkin, F.R.S.

Faculty of Divinity.

Divinity, Thomas Jackson Crawford, D.D.
Church History, William Stevenson, D.D.
Hebrew, David Liston, M.A.
Biblical Criticism, A. H. Charteris, D.D.

Faculty of Law.

Public Law, James Lorimer, M.A.
Civil Law, James Muirhead.
Scottish Law, Norman McPherson, LL.D.
Conveyancing, James Stuart Tytler.
Constitutional Law & History, Cosmo Innes, M.A.

Faculty of Medicine.

Material Medica, Robert Christison, M.D., D.C.L.
Medical Police, Douglas MacLagan, M.D.
Chemistry, Alex. Crum Brown, M.D.
Surgery, James Spence.
Practice of Physic, Thomas Laycock, M.D.
Anatomy, William Turner, M.B.
Pathology, William Rutherford Sanders, M.D.
Midwifery, Alexander Simpson, M.D.
Clinical Surgery, Joseph Lister, M.B.
Botany, John Hutton Balfour, M.A., M.D., F.R.S.
Institutes of Medicine, J. H. Bennett, M.D.
Natural History, Geo. Wyville Thomson, M.D.

The Scottish Universities, instead of being made up of several colleges, all forming one university, consist of several distinct Faculties independent of each other, in which there are professors appointed to teach the different subjects which go to constitute the Faculty. Thus there is a Faculty of theology, another of medicine, another of law, and another of arts. These are quite distinct from each other, and manage their own internal arrangements, subject to the revision of the *Senatus Academicus* and the University Court. In like manner each professor in each Faculty manages his own class or classes independently of the other members of his Faculty, but subject to certain general rules applicable to the Faculty to which he belongs. He divides the students who attend his lectures into two or three classes, and delivers his two lectures or his three lectures each day in his class-room, and there the relation between professor and student ceases, and they have nothing more to do with each other until they meet again at the next lecture hour.

The student does not live in college, or hall subject to university supervision, as in Oxford and Cambridge. He has his own lodgings in the town, is his own master in all matters, and the university takes no cognizance of his existence beyond its walls. There is no matriculation examination, and no necessity to follow any particular course of study. A fixed attendance at the lectures of certain professors, and a certificate from them to the effect that the student has attended their classes, is necessary for graduation; but beyond this there is absolute freedom of choice to the students to come at any age, to stay any length of time, to work or not to work, to belong to any religious denomination or no denomination. In short there is no interference of any kind with the students' lives. They pay their annual fees, and conduct themselves with propriety, within the university precincts, and beyond that they are perfectly independent of the university. Throughout the country we found indications of a desire to modify in some degree this freedom of action on the part of the universities and the students attending, and to introduce restrictions with regard to the age at which the students should be admitted, and with regard to the amount of knowledge which they should possess before admission.

There is great dissatisfaction existing among the teachers of the Burgh and Middle-class schools, occasioned by the conviction on their minds that the universities are interfering with their work. They consider that the classical and mathematical professors "poached" upon the schools by allowing students to attend their classes while still of school age, and by drilling these students in Greek and Latin grammar, or in the elements of Euclid and algebra, when they ought to have learned those things at school. This is no new subject of contention between the schools and the universities. As early as 1856 the masters of the Edinburgh High School complained bitterly of the interference of the Greek and Latin classes at the university with the school, and it was agreed by the Town-Council that "two of their number should wait upon the

College of Justice to acquaint them that it has been moved to abolish the humanity class in the University, as prejudicial not only to the Grammar School, but to the College itself, and proposing that the salary of the professor should be employed some other way for advancing learning." The College of Justice, without hesitation, refused to listen to such a recommendation. In 1772, the other side of the question was raised, and a remonstrance was laid before the patrons of the High School by the principal and professors of the university against the introduction of Greek into the school for the first time, on the ground that by this innovation an encroachment was made on the province of the university.

Some of the professors in the different universities take the same view upon the subject as the teachers, and hold that some alteration should be made in the ordinances of the universities by which a line might be drawn between university work and school work. Among them Professor Blackie, of Edinburgh University, holds:—

The University should begin where the Burgh school ends; and transition from the one to the other should take place, as in Prussia, only on a regular certificate of fitness. The want of this graduated system is one of the greatest evils in the present upper education of Scotland.

Professor Campbell, of St. Andrews, writes:—

The Burgh Schools should be the natural feeders of the Universities; and a certificate of having passed the final examination at the Burgh school in English, arithmetic, Euclid, and Latin and Greek, might perhaps be a fitting substitute for a University matriculation examination.

Professor Geddes, of Aberdeen, considers—

That it would be desirable to introduce something of the nature of the *Abiturienten-Examen*, as practiced in the Gymnasia of Germany, whereby the rector of a Burgh school, in conjunction with one of the inspectors, should have the power of awarding, upon a well understood programme, certificates of fitness to proceed to the University, which certificates should entitle the students possessing them to the position of public students, and therefore capable of becoming candidates for the degree in Arts. The effect of such an arrangement would be, that the school standard would be raised by the best possible means; that it would be the *interest* of the schools, as it is in Germany, to retain their pupils as long a time as possible, in order to mature and perfect their attainments, and that the schools would be placed in a highly honorable position with reference to the University. What facilities should be given to students other than those from Burgh schools to attain the same position, so as to be distinct from private students, who should have no right or claim to the degree, is another matter, but I have no doubt that such facilities could easily be devised. When a system of so-called "certificates of maturity" is devised under proper checks, and on a fair programme of scholarship, there will be no difficulty in reducing the curriculum of the university to a three years' course, compensation being of course given to those chairs that would be affected by such an arrangement.

On the other hand, Professor Sellar, of Edinburgh, is opposed to any more stringent examination than that allowed by the 14th ordinance of the University Commissioners. By this ordinance, it is enjoined, that students entering the university, may, by passing a satisfactory examination, dispense with attendance in the junior classes, and by this means they may complete their curriculum in three winter sessions instead of

four. His objection to an entrance examination comes to this. If such an examination be a *bona fide* stringent examination, a number of young men above eighteen years of age, who now come to the universities from Normal schools and remote country districts would be excluded, and if it were not a stringent examination, sharp boys of fourteen or fifteen years of age from a good school would easily pass it. In answer to the question bearing on this point he says:—

I do not see that the Burgh schools can be placed in any direct relation to the Universities. At present the Universities draw less than half of their numbers from the Burgh schools and other Public schools, such as the Edinburgh Academy, the Dollar Institution, the Madras College at St. Andrews, etc. They draw also a considerable portion, especially in the junior classes, from the parish schools and other primary schools in the country districts. But indirectly, the Burgh schools and the Universities may do much to assist one another. The Universities may look to the Burgh schools, when reformed and reorganized, to send up a class of students better trained than the majority of those who come from other places of education; and the introduction of even a small number of such students would have a most beneficial influence in raising the standard of attainment among the mass. Again, the prospect of attaining bursaries and other university distinctions might be expected to act as a great stimulus both to teachers and scholars, and success in these competitions to raise the reputation of the best schools, and thereby improve the position of the teachers. It is to be regretted that in the universities of Edinburgh and Glasgow there are, at present, very few bursaries awarded according to merit. The competition for open bursaries at Aberdeen and St. Andrews has an excellent influence on the schools in connection with those Universities. The ordinance of the University Commissioners, in accordance with which students entering the University may, on passing a satisfactory examination dispense with attendance on the junior Latin, Greek and Mathematical classes and thereby complete their curriculum in two years and a half, is also calculated to benefit the Burgh schools. In the University of Edinburgh, a considerable number avail themselves of this privilege; and a much larger number may be expected to do so, both in the Edinburgh and the other Universities, when the schools are put on a better footing. It ought to become the general rule for students who have attended a Burgh school for five or six years, to be able to enter at once the senior classes in Latin, Greek and mathematics, and to finish their University course in two years and a half; and parents who have the opportunity of sending their sons to a good school, may be expected to see the advantage of keeping them a year or two longer there than they do at present. The Universities should, I think, annually publish a list of the successful candidates in this examination, adding the names of the schools at which they have been educated. It is sometimes proposed, with a view of doing more justice to the Public schools that the junior classes in the University should be abolished, or that all students on entering the University should pass a matriculation examination. It is urged that these junior classes maintain themselves by "poaching on the schools." A more exact knowledge of the composition of these classes would very much modify these statements. The large majority attending these classes would get no University education at all if they were abolished. As a proof of this, it may be mentioned that the average age of the students attending the Junior Humanity Class in the University of Edinburgh during the present session is between nineteen and twenty,—nearer twenty than nineteen. Out of the whole number of one hundred and sixty attending the class ninety-nine are above the age of eighteen. It certainly is not desirable that they should continue at school, or go to a Burgh school for the first time, at that age. Many of them have taught themselves, or received their education in remote country districts. A considerable number of men of real ability come from the Normal schools, where they have had no opportunity of making much progress in Latin and Greek. Many of these would be deterred from coming to the University by the prospect of an entrance examination, in which, if they failed,

they would probably have to abandon all thoughts of preparing themselves for a University career, being too old to enter a good school, and too poor to employ a private tutor. If the standard of the examination were fixed so as not to exclude or deter the self-taught, or those coming from remote country districts, it would not be too high to exclude a moderately sharp boy of fourteen or fifteen from the Edinburgh High School or New Academy. Many of the poorer students from the Parish schools or Normal schools, who enter the junior classes at a comparatively late period in life, make great progress, and in their second year hold their own against the best students of the senior class. The highest honors in my senior classes, both in St. Andrews and Edinburgh, have often been carried off by young men of energy and ability, who had entered the junior class with few previous advantages, and who had by industry in their first session and first summer vacation, qualified themselves to compete successfully with scholars from the first schools in Scotland. The Burgh schools should aim at preparing their pupils for entering the senior classes in Latin, Greek, and mathematics. To those who pass this entrance examination, the University course is much simplified. They can, without any strain upon them, but, with moderate industry, during their three sessions and two summers, obtain the degree of M. A., in two years and a-half. For parents who can send their sons to a good Burgh school, this is the object to aim at. With the improvement of the Burgh schools, the junior classes in the Universities may be expected to fall off considerably in numbers; but they should continue to exist open to all who, in spite of early disadvantages, wish to raise themselves in mental cultivation, or social position through the means of a University education.

We have returns from eight hundred and eighty two students in the Latin, Greek, and mathematical classes in the Universities of Edinburgh, Glasgow and St. Andrews, and of the junior Latin and Greek classes in the University of Aberdeen, for the session 1866-67, and from these returns the social position of the students attending the Scottish Universities may be accurately judged.

From the schedules of these students we find that the answers to the questions relating to the profession or occupation of their fathers may be divided into the eight following heads:—

CLASSES.	Aberdeen.	Edinburgh	Glasgow.	St. Andrews.	Total.	Per Cent.
I. Professional,.....	34	104	108	90	336	31.2
II. Commercial,.....	11	50	76	9	146	16.6
III. Agricultural,.....	37	54	60	11	162	18.3
IV. Shopkeeping,.....	3	12	13	1	29	3.3
V. Artisans & sk'd lab'rs,	12	57	65	9	143	16.2
VI. Laborers,.....	3	10	15	1	29	3.3
VII. Indefinite & Sundries,	7	17	13	1	38	4.3
VIII. Profession not given,...	11	12	24	13	60	6.8
TOTAL,.....	118	316	374	74	882	100

These returns are corroborated by those furnished by Professor Blackie. They show, beyond all doubt, that the Scottish Universities are essentially national; that their advantages are not confined to a class as in England, and, to a very great extent, in Ireland; but that almost every grade in the social scale is represented, from the highest to the very lowest.*

* In the course of the inquiry, the son of a shepherd in the West Highlands called upon us and told us of his circumstances. His father had £30 a year of wages, besides his house, cow's grass and croft. The lad who was twenty-two years of age, had gone from the Parochial school in his native parish in the West Highlands to the High School in Inverness, and from there he had come to the

Of the eight hundred and eighty-two students attending the Universities, there are no less than twenty-nine sons of common laborers; and 16·2 per cent. of the whole number of students belong to that class who live by skilled labor and artisan work. Farmers, ministers, and merchants' sons are more numerous than any other classes. One hundred and twenty-five of the students are the sons of farmers; one hundred and eleven are the sons of ministers; and ninety-four are the sons of merchants; or 37·4 per cent. of the whole number of students. So in the returns from Professor Blackie's classes, extending over a period of six years, it appears that out of one thousand two hundred and twelve students, one hundred and seventy-five are sons of farmers, one hundred and ninety-nine are sons of ministers, and seventy-nine are sons of merchants, or also 37 per cent. of the total number. Many of those students are the sons of small farmers living at a distance from any Burgh or Middle-class schools; or of ministers in remote parishes, with nothing but the Parochial school in which to get their education; or of small general merchants living in little villages in the Highlands, and entirely educated in the Parochial or Free Church schools.

1. Those educated at the New Grammar School.
2. do. do. any other Burgh School.
3. do. do. Parochial schools in Aberdeen, Banff, and Moray.
4. do. do. in any Public school (not being a Burgh school or Parochial school in one of the three counties).
5. do. do. Private schools or other places of education.

And from these returns it appears that out of 670 students, 318 came from the two first classes of schools, and 352 from the others. In like manner, out of 764 students attending the arts and mathematical classes in Edinburgh, Glasgow, and St. Andrews Universities, it appears from the tables in the Appendix that only 35, 46, and 47 per cent., at the respective universities, have been educated at Burgh and Middle-class schools, the remainder having come to the universities from Parochial or Free Church schools, or having been educated out of Scotland, or by private means. These results authoritatively prove that the proportion of students coming from the Burgh and Middle-class schools to the universities is comparatively small, and in no case does it reach half the number of students who matriculate each year at the several universities.

From tables carefully prepared, it appears that sixteen, seventeen, and eighteen are the ages at which the majority of students come to the *junior* classes. There are no students under fourteen years of age, and nine only out of 459 are under fifteen. Eight per cent. are fifteen, nineteen per cent. are sixteen, eighteen per cent. are seventeen, and ten per cent. are eighteen. These tables are substantially corroborated by the

University of Edinburgh. He spent the winter session at College, lodging along with another student at 3s. 6d. per week. His whole winter expenses amounted to £22; and he earned the greater part of this by teaching a school in summer in a remote part of the Highlands. It was also related to us as an authentic fact, that the son of a well-known Dumfries beggar attended the late Professor Pillans' classes, and was a diligent student.

returns from Professor Blackie's Greek classes, extending over a period of six years. During these years it appears that five students have attended the Greek classes who were only thirteen years of age; two per cent. were fourteen, and nine per cent. were fifteen. In the smaller area of a single class of Logic, Metaphysics, and English literature at St. Andrews, very similar results are obtained, seven per cent. being fifteen years of age, twenty-three per cent. sixteen, eleven per cent. seventeen, and twenty per cent. eighteen. Such are the main statistical facts to be learned from these returns. But it is also to be observed that there is comparatively little difference between the ages of students at the senior and at the junior classes. There are nearly as many very young men at the senior classes as at the junior, and almost as many older men at the junior as at the senior classes, as may be seen from the following tables of the number of students in the senior and junior classes, arranged according to three periods of age.

Numbers of students in the Senior and Junior Classes, also in the three periods of Age of 882 students in the four Universities, and 1,212 under Prof. Blackie.

AGES.	Numbers in Senior and Junior Classes.							
	The Four Universities.				Professor Blackie.			
	Senior.	Junior.	Together.	Per Cent.	Senior.	Junior.	Together.	Per Cent.
19 and under,.....	234	307	541	61.3	386	421	807	66.6
20-24 inclusive, ..	153	118	271	30.7	152	165	317	26.1
25 and above,.....	36	34	70	8.0	35	53	88	7.3
TOTAL....	423	459	882	100.0	573	639	1,212	100.0

From these returns it appears that sixteen, seventeen, and eighteen are the ages at which a majority of the students enter the universities; a small proportion are rather younger, but 83 per cent. are at or above twenty years of age. They throw no light on the problem of limitations—the line at which school age should end, and the university age begin. At seventeen the universities interfere with the schools, but on the other hand, the schools interfere with the universities, by educating nearly as many scholars of that age and above, as the universities educate under that age.

The instruction given in the Junior classes of the four universities,* as shown in the Report of the Commissioners, does not exceed in quality or advancement, the work done in the Senior classes of the Burgher Schools, Academies, and High Schools.

* In Latin, the books read at Aberdeen are Cicero (*two Orations*), Horace (*736 lines of Odes*, and *887 of Satires*), Juvenal (*344 lines*), Livy (*8 chapters of B. III., and 94 chapters of B. VIII.*) Ovid (*Faste 947 lines*), and Latin Composition (once a week); Edinburgh, Cicero (*two orations*), Horace (*Odes and Satires each one book*), Virgil, (*two books of Georgics or Æneid*), Tacitus (*half of Agricola or Germania*), and at Glasgow and St. Andrews the amount read is about the same.

In Greek, the authors read vary, but the amount is about the same, for instance at Edinburgh—Edward First, *Greek Reader*, Homer (*Odyssey*, two books), Zenophon (*Memorabilia*), Clyde's *Greek Syntax*, Greek Conversation (daily), Private Reading (by an average of 15 of the class).

In the Mathematical Classes, Geometry (in either Euclid or Playfair, Books, I-VI), Algebra (up to Quadrates, and to the extent of Todhunter's School Treatise), Trigonometry in the Elementary Treatises (Todhunter, or Galbraith).

MODELS AND OTHER APPLIANCES FOR INSTRUCTION IN DRAWING.

The following extracts are from a Paper by Ellis A. Davidson, "on *Industrial and Scientific Education as exemplified in the Paris International Exhibition of 1886*," read before the Society of Arts in 1887:—

On the continent, under the heads of "Gewerb-Schulen," "Real-Schulen," and "Ecoles Polytechniques," institutions for practical studies have been in operation for many years past, and it is proposed to give in this paper a brief account of some of the results obtained, as exemplified in the Paris Exhibition.

In the schools referred to, the studies are, as their names imply, of a real or practical character. The students learn, not only to make a drawing of a machine, but to prepare the working drawings from which a machine may be constructed; and, in many cases, to make the objects from the drawings. This must tend to show them the importance of accurate measurement and correct delineation. They learn, not only that the drawing must be exact, or it would be useless, but in turning or putting together the various parts, they do so with more readiness from having studied the construction on paper.

The collective exhibition of the Austrian Imperial Ministry of State contained numerous works and models, illustrating the courses of various studies carried on in this group of schools. The models will be referred to further on, and the scientific drawings mentioned here. The leading set of studies shows an excellent mode of combining several elementary manual processes with scientific instruction, thus avoiding a difficulty often experienced when instructing persons whose minds are in advance of their hands—who can "think out" a subject, but who can not execute it. Many practical teachers will have observed the diffidence with which a student, who has been allowed to continue his geometrical drawing in pencil for a long period, begins to work in ink, and how frequently a drawing, scientifically correct, is spoiled by the tinting, either with the draw-pen or the brush. The system pursued in the Austrian schools seems calculated to overcome the manual difficulties contemporaneously with the elementary scientific instruction. When the geometrical figures have been correctly done in pencil, they are from the first inked, great neatness of line and accuracy of intersection being insisted upon. They are then colored with flat washes, or sectioned over variously with the draw-pen; the inscribed and containing figures being tinted with complementary colors. Where parts of circles cover each other, each circle is colored with a primary, so that the part overlapped becomes of a secondary color, &c. This system is thoroughly worked out, and thus, at the same time, the student is learning practical geometry, shading with the pen, the use of the brush, and elementary coloring; so that, by the time he reaches the studies of mechanical or architectural construction, he is able to draw and color with tolerable correctness.

In these studies, too, the shading is scientifically worked out; all the shadows on the sphere are projected in circles, each circle separately tinted, according to its position, and so accurately, that at but a short distance the separate circles are not observable, but a beautiful rotundity of form is the result.

An excellent collection of scientific drawings was exhibited by the Industrial

Union of the Grand Duchy of Hesse (Grossherzoglich Hessischer Gewerbe-Verein), being the works of the pupils in schools for workmen of the duchy. These sets of works were the more valuable as it was evident that they had not been specially executed for exhibition, but seemed to have been taken from the daily studies of the pupils. They indicated, as indeed did all the works of the continental schools, an absolute connection between the scientific and artistic studies; and all the science students seem to learn free-hand and ornamental drawing and shading, &c., as well as mechanical drawing.

The whole subject of technical drawing, whilst it has been much neglected in this country, has been thoroughly systematized on the Continent; and the foreign schools possess completely organized sets of examples, combining the study of drawing with that of construction, adapted to the various branches of industry, of which we are very deficient. Thus there was exhibited by Wilhelm Beyerle, executed by the Gewerbe-Verein, a work in eight parts, quarto-imperial, with folding plates, called "Pattern drawing for artisans, adapted for the various trades;" each part containing numerous plates of working drawings, to scale, of the work of the engineer, builder, tin-plate worker, bricklayer and masons, cabinet-maker, upholsterer, slater, and staircase builder, in stone, wood, and iron. These plates, which are exceedingly good and are accompanied by complete text, would prove most useful in our science classes. Another set by the same publisher, designed by Hektor Rösler is called "copies for workmen's schools." It is in seven parts and contains geometrical construction, descriptive geometry, stonework, roofs and joints, stoves and heating apparatus, locksmiths' and cabinet-makers' work.

Still better, because larger and bolder, are the sets of diagrams and examples exhibited by the Royal Commission for parish workmen's schools in Wurtemberg. These are large (royal) lithographs of the most practical character, and all drawn on the scientific principles adapted for almost every branch of construction and ornamental work, with details to a larger scale, and broadly colored. The work is issued in parts of 48 plates and one sheet of text to each. Works in plaster, metals, and wood, by pupils of forty-four of the parish workmen's schools of Wurtemberg, were exhibited. These consisted of models of machines, buildings, roofs, scientific apparatus, furniture, &c., either to the real size or to a scale, whilst in the art division there were fine drawings from the round, plaster casts of ornament and figure, chased and hammered metal work, carving in wood, &c., all exceedingly good in character, and all showing the results of a sound system of technical education.

From the printed documents it seems that the first step towards the establishment of the series of technical and workmen's schools in Wurtemberg was made in 1818, by the introduction of drawing-classes into Sunday-schools, already established, for youths above fourteen years, who had left the primary schools.

Steps were afterwards taken by the Board of Education for extending the principle, but in 1848, the actual organization of working men's schools, as they are at present, was inaugurated by the then newly created Board of Trade and Industry, which was charged with the care of providing good instruction for youths engaged in trades and workshops. To effect this purpose, a special commission was appointed; but this commission had not the legal power to order parishes to establish the schools required, but could only proceed by way

of recommendation and by treating with such parishes as had shown interest in the subject. They were, however, much aided in their efforts by the circumstance that pecuniary means were liberally granted by the State in the form of subsidies to such schools as had been organized in conformity with the conditions fixed by the commission—the sums granted in this way amounting in general to half the expenditure made by the parishes themselves for the support of the said schools. The conditions chiefly insisted upon by the commission in the organization of the schools were, in the first place, the voluntary principle with respect to the frequenting of the schools; and the demand that fees should be paid by the scholars—a demand which, however small the fee might be, was considered of importance with regard to the well-known fact, that what is paid for is much more appreciated than what is obtained gratuitously.

The principal task of the commission is to take measures that suitable localities are selected, and that all necessary appliances for education, such as good books, models, diagrams, &c., are provided for the schools; to control the appointment of the managing bodies and inspectors, as well as the training up of good teachers of drawing, &c. The commission did not, however, deem it advisable to organize all the schools after a uniform system, but had regard to the various local circumstances and necessities. The 101 schools, numbering about 8,000 scholars, present, therefore, very different phases of development.

The four largest schools in the towns of Heilbronn, Stuttgart, Ulm, and Reutlingen, containing unitedly 2,500 pupils, have Sunday and evening classes offering all the different branches of instruction for mechanics, tradesmen, and young merchants; whilst the drawing-classes may be frequented throughout the day. At Stuttgart and Reutlingen there are also classes for young females who have left the primary schools, and which are attended by 130 scholars.

Thirteen schools established in the towns of Esslingen, Ludwigsburg, Gmund, Hall, Ravensburg, Biberach, Rottenburg, Canstatt, Tübingen, Geislingen, Ellwangen, Calw, and Ebingen, with conjointly 1,600 scholars, have likewise Sunday and evening classes, as well as drawing-classes, open throughout the day, but no mercantile classes. There are, moreover, 60 towns and 12 villages, having together 72 schools, and about 3,500 scholars, with regular classes on Sundays and on the evenings of the week. Of these five schools, numbering together about 250 scholars, have Sunday classes only. Three schools, with about 100 scholars, have Sunday classes combining scientific instruction with drawing; whilst four others, with about 100 scholars, confine themselves entirely to drawing.

In the Swiss department of the Paris Exhibition were several excellent works, illustrating the course of studies in architecture, engineering, and surveying. No novel features were, however, presented, the works being based on, or copied from, the German system.

Years of observation, study, and practical teaching, have shown me that, however good the diagrams and examples used may be, no real conception of forms can be obtained without the aid of solid models; for even though the pupils thoroughly understand the diagram, the form there given is only such as would be correct in *one* position; and in projection, it is in some cases almost impossible from that one view to form an idea of what shape may be presented by the smallest rotation, depression or elevation of the model. In this, pro-

jection differs from perspective, the one rendering the object as it is, the other as it appears; and here the imagination or observation generally offers some assistance; but in projection it is not so; point by point has to be obtained, which, when united by lines, develop forms which to the student are often surprising; and if the subject has only been worked out on the blackboard, and followed line by line by the students, they get the diagram copied, but they have not had the lesson which might have been given by the aid of a block or two of wood or a sheet of cardboard. This is very observable in that branch of mechanical drawing called development of surfaces. For instance, let it be required to teach a class of artisans to construct of sheet iron a pipe with two elbow-joints; these students would most likely have been accustomed to cut, file, and alter the separate pieces of piping so as to get the joints at the angles; and it would be difficult to convince them that the flat metal might at once be cut on properly constructed curves, so that the parts, on being rolled into cylindrical form, would fit each other at the required angles, without any waste of metal or time. But if a cardboard model has been prepared and exhibited in the course of the lesson, flat, and when the blackboard-construction has been followed, separated into three pieces and then placed in the required form, the interest of the pupils will not only be kept up, but they will be encouraged to think out similar developments adapted to their respective trades. Again, in the development of a cylinder penetrating a square prism, the forms of the aperture in the prism and the projecting portions of the cylinder are so different from what the uninitiated might suppose, that ocular demonstration becomes necessary, and the scientific construction of the curves may save the workman a great amount of time and labor.

The most complete collection of apparatus for teaching the sciences in connection with the mechanical arts was that exhibited by the *Polytechnisches Arbeits Institut und Maschinenfabrik* in Darmstadt, the author of which is Professor Schröder. The first part of the series consists of models for teaching descriptive geometry, penetrations and sections of solids, and developments of surfaces. These models are placed on wooden planes at right-angles to each other, thus realizing the vertical and horizontal planes of projection—the plans and elevations being drawn under and at the back of the objects. These models are not new to this country; a set of them was exhibited in London some years ago, and they have now been admirably reproduced by Messrs. A. & J. Rigg, of Chester. The great accuracy of their construction, and their number, renders the set necessarily expensive; but it is to be hoped that some aid or encouragement may at no distant time be given for the production of a selection of these models of a larger size, and in a somewhat simplified form, so that they may become more generally known and used.

The same Institute also exhibited a set of mechanical combinations and models, designed by Professors Retenbacher and Weisbach; they are made principally of iron, painted and bright, and are of the average height of eighteen inches; amongst them are the various escapements, shafts for the transmission of motion at various angles, turbines, water-wheels, various systems of spur, cog, annular, crown, face, and bevel wheels; plunger blocks, square, and elliptical wheels and cams, the various modes of coupling and disengaging shafts, Watt's parallelogram and a sectional model of part of a steam-engine, showing the interior of the cylinder, valves, the action of the governor, &c.

MILITARY SYSTEM AND MILITARY INSTRUCTION IN SWITZERLAND.

[Extract from "A Plan for Military Education in Massachusetts." By E. Dwight.]

1. OUTLINE OF MILITARY SYSTEM.

IN the year 1847 seven of the cantons of the Swiss Republic seceded from the Confederacy. Among them were the three forest cantons, the original nucleus around which the whole Republic had been formed, the birth-place of William Tell and Arnold, of Winkelreid. The seceders held the strongest military position in Europe, but the loyal cantons put on foot an army of 100,000 men, well armed, drilled, and officered. The city of Friburg was taken, and in thirty days from the first proclamation of the commanding general the war was ended and order was restored.

In 1856, a quarrel having arisen with the king of Prussia, Switzerland placed on foot an army of 200,000 men well provided with artillery. Thus the military system of Switzerland has proved itself effective; and as there is no standing army whatever, and the state is a confederacy of cantons under democratic forms of government, we may find something in their system applicable to our own case.

Switzerland covers an area of about 15,000 square miles, equal to that of Vermont and New Hampshire together, of which a large portion is covered by lakes, forests, mountains, ice and snow, leaving only thirty-one per cent of the land fit for agricultural purposes, not including the mountain pastures. Possessing a population of only two millions and a half of people, it is surrounded by military powers of the first class, and must needs be strong to be free. France, Austria, and Prussia are not always as good friends as they are near neighbors, and the little Republic must ever be ready to ward a blow and return it. The constitution of Switzerland declares that every citizen is a soldier. "Tout Suisse est soldat." Military service is required between the ages of twenty and forty-four. The substitution of one man for another is forbidden, but exemption from service is allowed to certain persons, such as officers of the government and of public institutions, clergymen, students of theology, members of the police, pilots and others. In some cases a man is excused from the more active service, but required to pass through the regular course of mil-

itary instruction and to serve in the reserve of the army when called upon. Such are the only son, or one of the sons, of a widow; or of a widower, provided the father be over sixty years old, and the son necessary to his support; a widower, the father of children in their minority, who has no resources except the work of his own hands; one of two or more sons when they make common household with their parents, if the family could not be supported by other brothers not subject to service; married men, or widowers having at least two children. These exceptions do not apply to officers.

The Council of State of each canton appoints yearly a "Commission on Furlough and Discharge," consisting of ten members, of whom two are medical men, two officers, one a corporal, one a soldier, and the others members of the council. The commission acts under oath; grants exemption for physical defects or want of height; or passes men from the active service to the reserve. A man who at the age of twenty has not attained the height of five feet and one inch can be furloughed for two years; and if, at the end of the third year, he has not reached this height, discharged from all service. Men who have been convicted of disgraceful crimes, or have suffered penal sentence, are declared unworthy of bearing arms; and if once deprived of their civil rights can not hold a commission.

The militia is divided into the federal contingent and the landwehr. The federal contingent consists—*First*, of the elite, which includes three per cent of the whole population, taken from those between the ages of twenty and thirty-four. The time of service in the elite is eight years. *Second*, the reserve, being one and a half per cent of the population and not above the age of forty. The landwehr includes men up to the age of forty-four. The landsturm, or *levy en masse*, consists of the whole male population, capable of bearing arms, between the ages of twenty and fifty, and not included in the classes before described. The male population of Switzerland is 1,140,000, of which thirty-seven per cent, or 422,000, are between twenty and forty-four years of age. One-fourth of these are exempt or found unfit for service, leaving 316,000 perfectly fit. In 1853 the number of men required for the federal contingent was 104,354,* but according to official statements the number of men in all branches of the service, well armed and instructed, amounted to 125,126. The excess of men supplied, over those required, arose from the public spirit and general desire for military instruction existing among the people. Add to these 125,000 the landwehr, which numbered 150,000, and we have a total of 275,000 effective men, well armed, drilled, and officered.

* Infantry, including Rifles, 89,306; Artillery, 10,336; Cavalry, 2,800; Engineers, 1,530.

The federal army is composed of the following arms: engineers, including sappers and pontoniers; artillery, including rocket batteries; cavalry, riflemen, light infantry, and infantry. There is besides a medical corps for the service of the ambulances and hospitals. But as uninstructed men are of little or no value, the federal law upon military organization provides that the cantons shall see to it that the infantry of their contingent is completely instructed according to the federal rules, and though the application of this principle in its details is left to each canton, yet the following rules are laid down: recruits are not received into the federal elite until they have gone through a complete course of instruction which lasts at least twenty-eight days for infantry, and thirty-five days for light infantry. The confederation charges itself with the instruction of the engineers, artillery, cavalry, and riflemen. This course lasts twenty-eight days for riflemen and forty-two days for the three other arms, but these recruits have previously been drilled in the school of the soldier by their cantons, and the riflemen have received preparatory instruction in firing at a mark.

In the larger cantons—that of Zurich for instance—divisions of recruits in succession are put into barracks and well drilled practically and theoretically for fifty-six days, either consecutively or at two periods of the same year, as may best suit the youths. In the second year after entering the elite, and for each year afterwards, the infantry is called out for drill during three days, by half battalions at least, with preparatory drill of three days for the “cadres,”* the commissioned and non-commissioned officers forming skeleton corps. Days of entry into service are not counted as days of drill, and in case of interruption the days of drill are increased by two days. The reserve is called out for drill during two days of each year, with a preparatory drill of one day for the “cadres.”

In the corps of engineers, artillery, cavalry, and riflemen, the elite is called out every alternate year for the engineers and artillery, and every year for the cavalry and rifles. The drill lasts four days for the “cadre of engineers and artillery, and immediately after ten days for the cadres and companies united, or twelve days for both together. For the cavalry the drill lasts seven days for dragoons and four days for “guides;” for riflemen, two days for the cadres, and immediately afterwards four days for cadres and companies united. The reserve is called out for a drill of half the length of that of the elite.

To complete the instruction of the soldier the cantons in their turn send their men yearly to the federal camps where the troops to the

* The officers, non-commissioned officers, and corporals, constitute what is called the “cadre.”

number of three or four thousand, are kept under canvas for two weeks. Larger numbers of men, forming bodies of 5,000 and upwards, are also mustered and cantoned in the villages, and during several days exercised in the grand movements and manœuvres of war, chiefly for the instruction of commanders and officers of the staff.

To keep up the efficiency of every department of the service the whole is subjected to the yearly inspection of colonels of the federal staff appointed by the central government. The inspection of infantry is confided to ten colonels who serve for three years. There is also an inspector in each of the arms of engineers and artillery, the latter having under his direction an administrator of materiel charged with the inspection and surveillance of all the materiel of the confederation. This administrator directs and superintends the workmen employed in the factories of the confederation for the manufacture of powder and percussion caps, as well as arms, gun-carriages, &c. The colonel of cavalry and the colonel of rifles direct all that relates to their respective arms, and recommend the necessary improvements. If these inspectors detect in the contingent of any canton any want of perfection in drill, they have the power to order such additional drill as may bring the men up to the proper standard.

Great care is taken in the instruction and selection of officers. The officers of infantry, up to the grade of major, are appointed by the cantonal authorities; the higher officers by the federal government. But no officers can be appointed to the special arms of engineers, artillery, and cavalry, except such as have gone through a course of instruction at a military school appropriate to each arm. No one can become a non-commissioned officer who has not served at least one year as a soldier, nor a commissioned officer except after two years' service. Candidates for promotion must pass a public examination, before a commission, both in theoretical and practical knowledge. Promotion is given, according to seniority, up to the grade of first lieutenant. Captains are chosen from among the lieutenants without regard to seniority. To be appointed major, eight years' service as an officer is required, of which, at least, two years as captain. For a lieutenant-colonel, ten years' service as officer, of which, at least, four as major of the special arm. For a colonel, twelve years' service as an officer is required, of which, at least, four years as "commandant," or in a higher grade. In the Swiss service there is no higher rank than that of colonel. When a colonel has been appointed commander-in-chief of the army, he receives for the time being, the title of general, which he afterwards retains by courtesy.

SCHOOLS OF INSTRUCTION FOR OFFICERS.

The Federal system of Military Instruction for officers, in 1871, embraced—

I. A Central Military School at Thun, to which all officers appointed to the General Staff repair to be instructed in their duties.

II. A School of Officers at Thun, in which all officers appointed to their respective regiments are instructed in their duties.

III. A School of Cantonal Instruction, held in Basle, to which the infantry instructors resort from every canton to learn their duties, undergo inspection, and preserve a common rule.

IV. A School of Young Officers, held at Solothurn and at St. Gallen, turn by turn, to which the several Cantons send their young officers who have just received their commissions, and to which all candidates for commissions repair for examinations.

V. Commissariat School, to which is joined a Medical and Ambulance School generally, at Thun.

VI. A Shooting School, for officers who give instruction to the Cadet Corps and other organizations in the several Cantons.

To these school organizations with their practical exercises must be added the opportunities afforded by the Cantonal reviews and field manœuvres, to which the young Swiss officer brings much valuable experience in his previous school and cadet drill.

The events of the late French-Prussian war tested the efficiency of the Swiss military organization and instruction. The French declaration was announced in Paris in the afternoon of Friday, July 15, 1870, and responded to by a counter declaration from Berlin on Tuesday, the 19th. But the Federal Council of Switzerland (which lay between the combatants, and might become the first theatre of belligerent operations), was summoned by President Dubs to consider the situation; and within an hour, the Cantons had been regularly summoned to complete their regiments with men, arms, horses, guns, and all stores and tools required for actual service, and five divisions of the Elite (the first, second, sixth, seventh, and ninth), were ordered to assemble in their several Cantons. The first division, under Colonel Egloff, was to secure the bridge at Basle and occupy the two banks of the Rhine. The first news which the men of Aargau had of the impending war was late on Friday night. By noon on Saturday squads of men were falling into the ranks in front of the town-hall of the cantonal capital—companies were formed—guns were got out—sappers, engineers, and guards were in readiness—officers were at their posts. In the

afternoon the first Swiss troops were in march for Basle, and by midnight the first regiment of Aargau were on the bridge; and by Sunday night the first division, under Col, Egloff, with 8,296 men, and 692 horses, besides the staff and guides; and the second division, under Colonel Salis, with 8,319 men, and 632 men at the same hour had assembled at Basle and held the roads and streams which led to Bonn. By Tuesday night, before the Prussian manifest was known in Bonn, the five divisions of the first Swiss army, with their eleven batteries of artillery mounting 96 field pieces, and a total force of 37,423 men, and 3,541 horses and 104 staff and guides, were under arms and at their respective rendezvous; and the President was authorized by the Council to announce to all concerned, "that any troops belonging to belligerent states, whether regulars or volunteers, who violate the territory of the Swiss nation, will be repelled by force."

Out of the officers whose men were first in the field, the Federal Council placed Colonel Herzog, of the Aargau detachment of the Federal army, in chief command, and by Saturday night the General's head-quarters were established at Alton (the center of the Swiss railways), where he organized his staff, issued his instructions to organize two hospitals, one for wounded men, and the other for horses, and at the same time ordered magazines of stores and clothes to be established in his rear, and the forces to be moved up to the front. All railway companies were ordered to report their stock of engines, carriages, and open wagons, and telegraphic communication was established for night as well as day service, and engineers were sent out to study every pass and point by which an enemy in any strength was likely to enter the territory of Switzerland. When all danger to the Cantons had passed away in the victories of the German arms, Gen. Herzog was directed to raise his camps, and send to their several Cantons their respective troops. Later in the war, when it was authentically known that Bourbaki was moving an army of 150,000 strong, to sweep across the Rhine; and still later, that the Germans meant to push the French, in either whole or part, across the Swiss frontier, and put them out of service for the rest of the war—General Herzog satisfied the President and the Council, and the Minister of War, of the impending danger, and on Thursday, Jan. 19th, the third, fourth, and fifth divisions, with two batteries of mountain guns, well prepared for winter service in a district lying under snow, were ordered out; and in one week from that date, these forces were distributed through the various passes in the Jura, from Basle to Geneva, with orders to repel, or

receive—to fight, or feed and lodge, according to the spirit in which the broken detachments of the French army should present themselves. For the enormous number (83,301), who laid down their arms, food and beds were distributed in the Swiss Cantons, by less than 20,000 citizen troops, without the forfeit of a single life. And when their work was done, these citizen soldiers laid aside their arms and uniforms and returned to their shops and industries of various kinds, to earn their daily bread, without forgetting for a moment their civic rights and household duties.

If the occasion had required it, as it did in the war of Secession in 1856, each Canton would have contributed 30 men from every 1,000 inhabitants, to the Elite, and 15 men to every 1,000 to the Reserve; and in case of danger to the Union, every male Switzer, from the age of nineteen to forty-five, not included in either of the above forces, would have obeyed the summons of the national authority for the Landwehr, adding 97,934 to the ranks, besides volunteering above and below the military age, to the number of 100,000 men, who, in case of a defensive war, could have been relied on,—all familiar with military tactics, and accustomed to obey as soldiers, as well as to the use of arms.

According to recent official statistics the strength of the several armies of Switzerland is as follows:

	Elite.	Reserve.	Landwehr.
1. Engineers,.....	900	630	.....
2. Artillery,.....	6,513	4,254	.....
3. Cavalry,.....	1,937	932	.....
4. Carabineers,.....	4,606	2,460	.....
5. Infantry,.....	55,994	26,448	.....
6. Sanitary Service,.....	144	78	.....
Armorsers,.....		30	.....
Total,.....	70,088	34,832	97,934

The system of recruiting, drilling and brigading, is local—which brings neighbors and friends into camp and field companionship, and inspires a sense of trust and coöperation.

The cost of the reliable military force is as follows:

Cantonal expense,.....	4,508,901 frs.
Federal expense,.....	5,486,396
	9,995,297

Contrasted with the cost of education the figures stand thus:

Communal expenses,.....	5,000,000 frs.
Cantonal expenses,.....	5,157,756
Federal Polytechnic,.....	287,611
	10,445,367

And for this sum Switzerland makes a near approach to universal education in schools of different grades, adapted to all classes.

MILITARY SYSTEM AND EDUCATION IN RUSSIA.

I. MILITARY SYSTEM.

THE Emperor is commander-in-chief of all the forces, by sea and land, assisted by the Staff-Office, the members of which are expert linguists, as well as scientific experienced and military officers. The army is under a Minister of War, assisted by a colleague and a military council. The office of Master of Ordnance is generally filled by a grand prince. The regular force, or army of occupation consists of about 783,000 men, which can be easily swelled to at least 1,200,000, as the whole male population are liable to serve when summoned. The army is mainly recruited by conscription, which falls on the serfs and laboring population, as the nobility, officials, clergy and merchants are exempted. The term of service is twenty years for the guards, twenty two for the line, and twenty-five for the train and military servants. But few pensions are granted to discharged or furloughed soldiers, although veteran soldiers are frequently appointed to situations as doorkeepers, watchmen, overseers, &c., in government establishments and public institutions.

Promotion by seniority, imperial favor, and good conduct on the field. Every officer must be educated and trained to his business, and serve from the lowest to the highest rank. Non-commissioned officers, musicians, assistant veterinary surgeons, head workmen in the military workshops and factories must all be trained for their special duties. A large portion of these classes are the sons of soldiers, who have been surrendered by their parents to the government, who receive them at the age of six or twelve, by special arrangement. They are termed *cantonists*. Among the special military schools of a technological character are, eleven for garrison artillery; three for armories; three for powder mills; three for arsenals; one for riding masters; one for fencing; one for accountants; one for topographical drawing, &c.

II. MILITARY SCHOOL FOR OFFICERS.

The officers of the Russian army obtain their first commission after passing through the Military Schools or Cadet Corps, or if qualified in scientific and other instruction, ascertained by open examination; by serving as privates six months, and as sergeants or ensign two years. Applicants for the Staff Corps, must have served as officers two years, must be recommended by their superior, and have been two years in the Staff School—and there pass an honorable examination in military history and strategy. The following statistics are taken from the *Kalender* of the St. Petersburg Academy, for 1859.

I. Under a Commission or Board of Military Instruction, which reports directly to the Emperor, there are

3 Military Schools of Special Application, viz.:			
1 The Nicholas Academy of the Staff, with 22 teachers and 250 scholars.			
1 The Nicholas Upper Engineer School, " 50 "	126	"	
1 The Michael Artillery School, " 32 "	117	"	
1 Page Corps, or College, " 41 "	159	"	
1 Ensign's School of the Guards, " 31 "	206	"	
22 Cadet Corps or Military Colleges, " 723 "	7440	"	
27	899	"	8,298 "

The Cadet Corps, or Military Schools, receive their pupils young, and impart a general as well as a scientific education, preparatory to entering the Special Schools of Application either for Engineer, or Artillery, and later in years and experience, the Staff School. These Special Military Schools are not surpassed by any of the same class in Europe.

II. Under the Ministry of War there are the following Scientific Establishments and Schools.

22 Military Schools, with.....	326 teachers and 10,000 scholars.
3 Lower or Element. Artillery Schools, 22 "	166 "
1 Topographers' School, with..... 13 "	140 "
1 Medico-Chirurgical Academy, with 35 "	978 "
Military Hospitals,.....	1,020 "
3 Veterinary Schools,.....	12,304 "

The Military Schools are of an elementary and technological character, and are intended to supersede a class of schools known as the *Cantonist* Schools.

The experience of the Crimean War demonstrated to the world, the wise forecast of the Russian government in providing for the thorough scientific and practical training of the officers of her great armies as was confessed by the "*London Times*," in the bitter dis-appointments of the English people with their own officers.

MILITARY SYSTEM AND EDUCATION OF THE UNITED STATES.

I. MILITARY SYSTEM.

THE Constitution of the United States grants to Congress the power "to raise and support armies," "to provide and maintain a navy," "to make rules for the government of the land and naval forces; and to provide for calling forth the militia," as well as "for organizing, arming and disciplining" the same, and for governing such parts of them as may be employed in the service of the United States—reserving to the States, respectively, the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress. By the same instrument the President is made commander-in-chief of the army and navy of the United States, and of the militia of the several States when called into actual service of the United States "to execute the laws of the Union, suppress insurrections, and repel invasions."

By law of August, 1789, a department of war, and in 1798, a secretary of the navy is provided to aid the President in the administration of military and naval affairs; and the original rules and articles of war enacted by the Congress of 1776, were continued in force, and in 1806 made the basis of the military code which has since governed all troops mustered into the service of the United States.

In 1790 the rank and file of the regular army was fixed at 1,216 men. In 1796 this force was organized into one corps of artillerists and engineers, whose head-quarters was at West Point, two companies of light dragoons, and four regiments of infantry of eight companies each. This force was increased by additional regiments in the war of 1812, the Indian war in Florida, and the war with Mexico, till in 1861, the army consisted of 14,000 men, stationed in the different forts and garrisons, and mainly on the Indian frontier. In the war of the Rebellion the regular army was increased to 50,000 men.

By act of July 15, 1870, the number of enlisted men was reduced

to 30,000 by or before July 1, 1871. On the 20th of October, 1871, the army was composed as follows:

Two regiments of Cavalry,.....	8,800	enlisted men.
Five regiments of Artillery,.....	3,105	" "
Twenty-five regiments of Infantry,.....	23,742	" "
One battalion of Engineers,.....	314	" "
Ordnance Department,.....	444	" "
West Point Detachment,.....	202	" "
Signal Department,.....	199	" "
Hospital stewards,.....	310	" "
Ordnance Surgeons,.....	114	" "
Available Recruits, <i>en route</i> ,.....	349	" "
Permanent Recruiting Parties,.....	904	" "
General Service Men,.....	420	" "
Total,.....	29,003	
Commissioned Officers,.....	2,105	
Retired Officers,.....	295	

When the insurrectionary movements and combinations of the Southern States in 1861, proved too powerful to be suppressed by ordinary civil powers, the President, April 15, called for 75,000 volunteers for three months, to defend the capital, and May 3, 42,000 to serve for three years or during the war. On the 22d of July he was authorized to accept the services of 500,000, which, within six months afterwards was increased to 1,000,000. This force proving inadequate, a levy of 300,000 men was ordered in 1863, and in 1864, another call for 500,000 men—making an aggregate of 2,653,062 mustered into the service of the United States, or nearly one fourth of the entire male population of the Northern States. This entire force was disbanded within one year from the close of the war.

The development of the naval resources of the country was quite as marvelous. In 1861 the entire navy consisted of 94 war vessels of all classes and in all conditions, capable when in service of carrying 2,415 guns. Only 43 of these ships were in commission, and the seamen and mariners numbered 7,000. In less than three years 200 war vessels were constructed and 418 merchant vessels were converted to military service, and over 50,000 men enlisted in the naval service.

The Southern States in rebellion put into the field over 500,000 men, and exhausted their pecuniary resources, with the loss of 300,000 soldiers on the field or in hospital.

The debt of the United States contracted in the prosecution of the war, stood in 1866 at the enormous sum of \$2,783,425,879.

These extraordinary efforts were made under circumstances which are not likely to exist again, and such expenditures could not be repeated without national bankruptcy.

The Militia of the United States, by act of Congress of 1792, consists of all white male citizens between the ages of 18 and 45, who must be enrolled and arranged into brigades, regiments, and companies, as the legislature of each State may direct. Of the militia, as organized by state legislation, the governor is commander-in-chief, except when called into the service of the United States. To provide arms and equipments for the whole body of militia, arsenals and armories are provided by Congress, in different parts of the country, at an annual charge of \$200,000 (since 1808).

In the absence of any official information respecting the number and condition of the Militia of the several States,* we gather the following statistics from a pamphlet by General J. W. Hoffman, of Philadelphia, on the subject of the National Guard.

State. Population.

Military Organization.

Alabama—996,992.

Arkansas—484,167—78 companies of State Guard, with a total of 5,484 men.

California—560,247,—30 companies of infantry, 2 of artillery, 5 of cavalry; organized into 2 battalions, 2 regiments, 6 brigades, 1 division—aggregate, 2,686. Term of service one year. The State furnishes uniforms, and pays \$50 per month to each company of infantry and cavalry, and \$25 per gun per month to companies of artillery.

Connecticut—537,454,—40 companies of infantry, 2 sections of artillery organized into 4 regiments, 1 brigade; aggregate 2,906. Term of service 5 years; parade annually, by company or regiment, in the month of May; attend camp for six successive days once in every two years. In addition, companies parade once in August or September, and drill not less than one hour in the evenings, not exceeding two evenings in each month, from October to April, inclusive. Compensation to all officers and men \$2 per day for each day's duty performed, and 5 cents mileage to and from place of parade. Members of bands \$2.50 per day and mileage; \$2 per day for every horse used; rent of armories are paid by the State, and all citizens between 21 and 45 years liable to military duty, but may commute by annual payment of \$2.00. Total moneys collected from this commutation tax, \$62,000 per annum.

Colorado—39,864.

Delaware—125,015.

Florida—187,748,—96 volunteer companies organized with 3,360 men, out of a total of 21,854 enrolled (116,112 white, and 10,242 colored).

Georgia—1,184,109. No organization.

Illinois—2,539,891. No state organization; a few volunteer companies who provide their own uniforms and are furnished with arms and accoutrements by the State.

Indiana—1,680,637. No organization.

Iowa—1,191,792. No State organization.

Kansas—364,399. No state organization beyond the 2 companies to operate against the Indians.

Kentucky—1,321,011. No organization.

Louisiana—726,915,—37 companies of uniformed infantry, 3 of cavalry, 1 of artillery; organized with 6 regiments, 2 divisions—one of which has 2 brigade organizations; aggregate strength, 3,469 out of 107,821 enrolled militia. Term of service 2 years.

Maine—626,915,—10 companies, with an aggregate of 937; State furnishes arms, equipments, and uniforms.

* The Militia System was broken up by the Volunteer System introduced by the United States and encouraged by State Legislation, and now (1879) even formal returns as to enrollment are not complied with by a majority of the States.

- Maryland*—780,894,—the State provides arms, uniforms, and rent of armories, and exempts members from jury duty.
- Massachusetts*—1,457,351,—92 companies of uniformed infantry, 5 batteries of artillery, 5 companies of cavalry; organized into 10 regiments, 3 brigades, and 1 division; aggregate, 6,277; State pays nearly \$200,000 per annum; at the annual inspection in 1870, 5,221 present.
- Michigan*—1,184,059.
- Minnesota*—439,706,—30 companies of infantry and 4 sections of field artillery.
- Mississippi*—27,922.
- Missouri*—1,721,295.
- Nebraska*—2,993.
- Nevada*—2,491.
- New Hampshire*—313,300.
- New Jersey*—906,096,—51 companies of infantry, and 2 batteries of artillery; organized into 4 battalions, 6 regiments, 2 brigades; aggregate, 3,146 out of 127,000 enrolled; every company parade at least 12 times in the year, one of which is by brigade; State appropriated in 1870 \$26,126. Term of service 6 years, with exemptions from poll tax and jury duty.
- New York*—4,382,759,—398 companies of infantry, 12 of artillery, 28 of cavalry; organized into 41 regiments, 21 brigades, 8 divisions; aggregate, 24,585; the State furnishes arms and allows rent for armory and \$5 per day for any enlisted man who has paraded 7 days in the year, which sum goes into a uniform fund. The State allows for head-quarter expenses, and appropriates annually over \$200,000 for its National Guard. Term of service is 7 years, with exemptions from jury duty, and a deduction of \$1,000 on the assessed valuation of taxable property.
- North Carolina*—1,071,361.
- Ohio*—2,665,260,—2 companies of uniform infantry and 2 sections of cavalry.
- Oregon*—90,923.
- Pennsylvania*—3,521,791,—311 companies, with an aggregate of 14,800; no general organization into regiments out of the county of Philadelphia.
- Rhode Island*—217,353.—State provides armories, or rent for same and pay of armorer, and \$2.50 per day for two days' parade, and \$3 per horse.
- South Carolina*—725,606.
- Tennessee*—1,258,520.
- Texas*—818,579.
- Vermont*—330,551,—4 regiments of infantry, 1 battery of artillery; the State provides arms, uniforms, armories, and \$2 per day for each days' drill, not exceeding 4 days, and tents for a three days' muster in the autumn.
- Virginia*—1,225,163.
- West Virginia*—442,014.
- Wisconsin*—1,054,670,—8 companies, organized as First Regiment.

The above statement of the legal condition of the militia of the several States, which together constitute the army of Reserve of the United States, is not very creditable to all concerned—to the cities and local communities, whose exemption from riots and illegal combinations of bad men may depend on the fact of an organized force, which the voice of authority could in an hour summon to the protection of the threatened houses and workshops of the citizens;—to the States, whose quota to any national call can not now be depended upon except at the cost of extravagant bounties, and whose raw recruits thus furnished would be worthless till after months of drill and field manœuvres;—to the nation, whose strength should be its weakness for purposes of foreign aggression, and its ability to summon millions of willing men, familiar with military organization and duties, to the defense of their hearths and free institutions.

The Volunteer soldiery in time of peace, does not hold the same distinct recognition in the armed forces of the United States, apart from the Militia of the several States, as in Great Britain; and yet the most efficient military organizations of the several States, and especially in our larger cities, are of this character; and in most of the States where uniform companies exist, they constitute a permanent and important force, whose services have proved highly valuable in quelling riots and protecting public property. Of the number of regiments or companies—their officers and men, distinct from the enrolled and organized State Militia, we have no official statistics.

MODE OF OFFICERING THE ARMY.

The commissioned officers of the United States army are drawn from three sources:—*First*, from the cadets of the Military Academy at West Point; *Second*, from civil life; *Third*, from the rank and file.

1. The appointment to the grade of lieutenant in either corps, follows regularly to any cadet on graduation, after having completed the course of instruction at West Point. From 1815 to 1832, the army was officered almost exclusively from the Military Academy.

2. The expansion of the military force consequent on the Indian war in Florida, from 1832 to 1837, and the Mexican war from 1845 to 1848, and of the Civil war from 1861 to 1865, was followed by the appointment of many persons from civil life, who had received no military training, and without any special qualifications beyond personal and political considerations.

As a stimulus and reward to special service, promotions are occasionally made from the rank and file, after a mere formal examination in the elementary branches of a common school education, and without the provision for professional training except such as can be got from observation and private reading.

PROFESSIONAL INSTRUCTION AND TRAINING OF OFFICERS.

In the organization and movements of the armed forces of the Colonies, the officers were trained in the military service of the mother country.

In the War of Independence, the general spirit of the people supplied for a time the want of trained soldiers and officers, beyond the small force which had been schooled in the French and Indian Wars; but the necessities of the service compelled Congress to authorize its accredited agents abroad to offer commissions, especially to engineer and artillery officers; and at the close of the war we find nearly all the prominent officers in the artillery and engineer

departments had been trained abroad. Nearly all the fortifications were planned by them and erected under their supervision. The names of Steuben, Kosciusko, Du Portail, Radière, Romans, Vincent, Rochefontaine, Toussard, Revardi, L'Enfant, Villefranche, and others of later date, will suggest to any reader of the military history of the country, the extent of our obligations to foreign military schools.

The sources of systematic professional instruction and training for officers of the armed forces of the United States, are—

- I. The National Military Academy at West Point, for the general scientific instruction of officers of all arms.
- II. The Practical School of Artillery at Fortress Monroe.
- III. The Engineer Battalion School of Practice at Hunter's Point.
- IV. The Company and Regimental Drill of various Volunteer Corps in the larger cities of the country.
- V. The Cadet Corps in various Military and Scientific Schools in different States.

The gradual development of the military Academy at West Point, and the present condition of Military Education will now be given.

THE MILITARY ACADEMY AT WEST POINT.

I. ORIGIN AND HISTORY. PERIOD I.—1802-1812.

THE influence of the United States Military Academy upon education, as well as its wide reputation as a school of science, render an inquiry into its rise and progress, a subject both of interest and profit. Since it is mind, rather than any system of forms and studies, which gives power to such institutions, a mere statement of dates and facts is insufficient to give us a just view of its character. We must, if possible, trace the spirit of the men who guided, and the principles impressed upon it. To do this, we shall resort, not merely to the record of events, but to our memory of men and acts, with which we were for years familiar.

It was not to be expected, that schools of refined, scientific art should be founded by small colonies in the wilderness of the new world. When even their clergymen must resort to Europe for education, and their lawyers for license, it was in vain to expect their soldiers to be accomplished engineers. When the revolutionary war came on, this fact became a painful experience. No man felt it more than Washington. With a people, whose patriotism was unquenchable; with soldiers, who rivaled the warriors of Leonidas, he found the best and truest of men, with the smallest possible share of military science. He was obliged to depend on European engineers for a skill which his countrymen did not possess; while their European ideas, and artificial habits were displeasing to his American principles.* He felt military instruction to be a primary want in the country. Accordingly, he was the real founder of the Military Academy; that is, he put forth the *germinal idea*. What the plan of it was to be, and what shape it should ultimately take, he did not state, and probably had not thought of; for Washington in the office of president, seldom meddled with the details of public affairs. What he meant to obtain; however, he distinctly stated, in his message, dated December 3rd, 1793; in referring to measures of national defense, he says an inquiry may be made: "whether

* Prepared by Major E. D. Mansfield, a graduate of West Point in 1819, for Barnard's American Journal of Education, March, 1862.

your own experience, in the several states has not detected some imperfection in the scheme; and whether a material feature in the improvement of it ought not to be to afford an opportunity for the study of those branches of the military art which can scarcely ever be obtained by practice alone."

In his message of December 7th, 1796, he said: "Whatever, argument may be drawn from particular examples, superficially viewed, a thorough examination of the subject will evince that the art of war is at once comprehensive and complicated; that it demands much previous study, and that the profession of it in its most improved and perfect state, is always of great moment to the security of a nation. This, therefore, ought to be a serious care of every government; and for this purpose an academy, where a regular course of instruction is given, is an obvious expedient, which different nations have employed."*

The views, always entertained, and repeatedly expressed by General Washington, were adopted by Mr. Adams, and Mr. McHenry, secretary of war, in his administration, made an elaborate report on this subject, which was transmitted to congress, on 10th of December, 1800. It is due to Mr. McHenry, to say that his ideas of what ought to be a course of military instruction, were far in advance of what were actually provided, till after the war of 1812—'15 proved his ideas to be correct. In 1794, prior to the last message of Washington, congress attempted to supply the want of a military academy, by attaching cadets to the corps of artillerists, and engineers. This corps consisted of four battalions, to each of which eight cadets were to be attached. This made the whole number of cadets thirty-two; and for this corps of artillerists, engineers and cadets, the secretary of war was directed to procure books, instruments and apparatus. The term *cadet* signifying in French, the youngest brother of a family, and in Spanish, a young volunteer officer, became naturally applied to young men, who were junior, volunteer officers. In England, the *cadet* of a family was a young son, who volunteered for the India service; and in the United States has been properly applied to the youth, who enter the military academy.

It seems from the message of Washington, in 1796, that the attempt at military instruction, was a failure. No place, no teachers, no studies, were appointed. It was on the 16th of March, 1802, in

* It is not meant, to say that this subject was not mentioned before. It was by Col. Pickering, in 1753. But whoever reads the letters and memoirs of Washington, will see, that all the early ideas on the subject of military education and military science were derived from the experience of Washington.

the early administration of Mr. Jefferson, that congress established, by that name, the *Military Academy*. It was still made part of an army corps; the idea of making a separate institution for scientific studies not being yet matured. The artillerists and engineers were made two distinct corps, of which there were forty cadets of artillery and ten of engineers. The corps of engineers consisted of a major, two captains, four lieutenants, and ten cadets, making seventeen in all. *The corps constituted the military academy*, established at West Point, in the State of New York. So little idea was then entertained of the true objects and mode of scientific instruction, that the law required the cadet, as well as officer, to do duty in any part of the United States. In other words, the only idea of the military academy, at that time, was a *place appointed where the officers of engineers might give or receive instruction, when not on other duty*. The actual academy, such as it was, conformed to that idea. The major of engineers was the commander, or superintendent. The two captains were instructors, and the cadets were pupils. It was, as a school, an inchoate existence, without regular teachers, or limited studies, or proper discipline. Yet, even in this imperfect condition, it did, as we shall see, some service which ought to be gratefully remembered.

In the meanwhile, let us turn for a moment, to the *place* which is so memorable in the annals of this country, and is now so intimately associated with science. If Dr. Beattie is correct in saying that the character of the mind is much associated with natural scenery, no place in America could have been more wisely selected, as the site of a national institution. World renowned, as West Point justly is, there is that in its scenery and associations, more interesting to a poetic or a patriotic mind, than its famed Academy. Its green plain, hidden amidst its mountains; its craggy summits; its rocky barriers; its dark evergreens; its darker waters, flowing on forever; that beautiful view of town and country, seen through the frowning brows of Crow Nest and the Beacon; that quiet vale, where Washington oft bent his steps; those lonely little mounds, where the soldiers of the Revolution repose; these forts and ramparts now indistinctly seen, which once guarded these mountain passes; yon ledge of rocks, where Kosciusko once made his little garden; all these and other memorable things, call up whatever is sublime in nature, or noble in history. It is impossible to forget them. It is impossible for the dullest mind, not to have its sensibilities excited, or its character elevated by the contemplation of such sublime scenes, or such interesting events. When such a spot

becomes the place of our education, its memories become poetic; its associations mingle with the flow of life, and the structure of our minds.

To return. The law having authorized this ideal Academy, it was immediately instituted, by the appointment of officers. The Academy, it is seen, was on quite a small scale. In fact, so far as teaching was concerned, the Academy consisted of two captains of engineers and ten cadets. The two captains were WILLIAM H. BARRON and JARED MANSFIELD. Mr. Mansfield had been a teacher of mathematics, navigation, and the classics, first at New Haven (Conn.) and then at Philadelphia. He had written a volume of "Essays" on mathematics and physics, quite original, and distinguishing him at that time, as the first mathematician of his country. This was brought to the notice of Mr. Jefferson, who with no great love of military affairs, was a warm friend of science. When the act was passed authorizing the Military Academy, Mr. Jefferson wrote to Mr. Mansfield, that he would appoint him a captain of engineers, for the *very purpose of becoming a teacher at West Point*. Accordingly he was appointed, on May 3rd, 1802; Captain Barron had been appointed in April. Then, in May 1802, the actual Military Academy was constituted, Captains Barron and Mansfield being teachers of mathematics and philosophy, to some half dozen or more cadets and lieutenants. No professor of engineering or of any other department was appointed before 1812. In pursuing the course and growth of instruction at West Point, during this period of ten years, we can only refer to the services of the instructors and graduates. In fact, there were no graduates prior to 1815; but there were *appointments* made from the cadets of the Military Academy, after more or less study at West Point. To understand what was done, we must refer to the actions of teachers and cadets, rather than to history. Its teachers were few and its annals brief. Captain Mansfield, after a year's teaching at West Point, was in 1808, appointed by Mr. Jefferson, to a more responsible position. It was necessary to the correctness of our public surveys, that the meridian lines and the base lines (which are co-ordinates,) should be established with astronomical accuracy. For this purpose, Captain Mansfield was appointed surveyor general of the north-western territory; furnished with astronomical instruments, and taking his residence in Ohio, proceeded to establish and perfect that beautiful system of surveys, by which the north-western states are distinguished. Retaining his military bent, with a view to his original destination at West Point, he actually returned there in 1814, to

recommence, as we shall see hereafter, his career as an instructor in the national institution. Of Captain Barron, his co-teacher, we only know that he was relieved in February, 1807. At the same time, his successor, FERDINAND R. HASSLER, was appointed, and remained till he resigned in 1810. Mr. Hassler was, we believe, a Swiss by birth. He wrote a small treatise on mathematics, and had quite an extensive reputation, as a mathematician, but was said to be too analytical and refined in the character of his mind, for American practical habits. He was intended for the coast survey, and, we believe, actually commenced it.

In November, 1806, ALDEN PARTRIDGE, superintendent of engineers, was appointed *acting assistant* professor of mathematics, and retained that position till April, 1812.

The "Teacherships" of French and drawing were created, by the act of February, 1803, being a very important addition to the original scheme of the Academy. To the teachership of French, FRANCIS DE MASSON was appointed, March, 1804, and resigned in March, 1812. To the teachership of drawing, CHRISTIAN E. ZOELLER was appointed, September, 1808, and resigned in April, 1810. Mr. Masson was a Frenchman by birth; Mr. Zoeller, a Swiss. Mr. Masson was highly spoken of by Colonel Williams, a good judge of what constitutes a scholar. Mr. Zoeller was an amiable man, of no high attainments, whose instruction in drawing was wholly confined to the military part, fortifications and bridges.

From this brief history, it appears, that there were but six teachers at West Point, between 1802 and 1812. Of these, no more than four were ever present at one time, and that only between 1808 and 1810. The teachers present, each year, were as follows:

- | | |
|------------------|--------------------------------|
| 1802—1803, . . . | Captain Barron, Mathematics. |
| | Captain Mansfield, Philosophy. |
| 1804—1806, . . . | Captain Barron, " |
| | Francis Masson, French. |
| 1806—1807, . . . | Captain Barron, Mathematics. |
| | Francis Masson, French. |
| | Alden Partridge, Mathematics. |
| 1808—1810, . . . | Ferdinand Hassler, " |
| | Alden Partridge, " |
| | Francis Masson, French. |
| | Christian Zoeller, Drawing. |
| 1810—1812, . . . | Alden Partridge, Mathematics. |
| | Francis Masson, French. |

This glance at the actual teachers of West Point enables us to

see at a glance, what was done. No continuous study was pursued at all, except mathematics. For the eight years, between 1804 and 1812, French was taught by an able professor, Mr. Mason, and from 1808 to 1810, drawing. In 1812, this inchoate existence of the Academy was ended by the act of congress, reorganizing the institution, and placing it on a permanent and extensive foundation. The next period of five years, from 1812 to 1817, was the *forming* period of the Academy. In some respects, its elements were chaotic. In others, its *personnel* was inefficient and inharmonious. In others, again, its materials of instruction were inadequate. From this condition it finally emerged, and attained its present high character and usefulness. The history of this change is important, if not interesting to those who would understand what are the true foundations of a great school of education. In the meanwhile, let us return to what the *CADETS* of the Academy had done. If they were few, and with small means of instruction, they may nevertheless have shown that the Academy was not altogether fruitless. How many cadets were appointed between 1802 and 1812, we do not exactly know, but we have the number appointed *from the Academy*. The number of cadets promoted from the Academy during that period were for each year, thus:

In 1802, . . .	2.
In 1803, . . .	3.
In 1804, . . .	2.
In 1805, . . .	3.
In 1806, . . .	15.
In 1807, . . .	5.
In 1808, . . .	15.
In 1809, . . .	7.
In 1811, . . .	19.
In 1812, . . .	18.

This makes eighty-nine in ten years. Let us look at their career, as stated in the brief annals of the army; or, as they are retained in memory. Of this number, comprising ten cadets of more than half a century ago, this is the result:

Killed in battle, . . .	10.
Died in service, . . .	21.
In service,	7.
Resigned,	33.
Disbanded,	10.
Dropped,	3.
Dismissed,	4.
Declined,	1.

This is no bad roll. If we were to search our college rolls for those who had been really useful, those who died in battle, or served to the end, or entered other fields of usefulness, or now live in the performance of duty, we should find a less grateful exhibition than this. The number of those who had been "dropped," or "dismissed," for incompetence, or vice, would be far greater. Alas! if we could read the secret history of the college roll, how sad would be that account! We know, that in times past, many of the officers of the army were addicted to dissipation. Happily, we can say, many less now. But since we would estimate the value of the Military Academy, even in its most imperfect condition, let us see *who* some of these men were.

The first cadet appointed was General JOSEPH G. SWIFT,* who having risen to the rank of general of engineers and inspector of the Military Academy, resigned, became surveyor of the port of New York, and is now a venerable and respected citizen of Geneva. Of those who were killed in battle, *Eleazer D. Wood*, (whose monument stands at West Point,) was killed while loading a cannon, in the sortie from Fort Erie. Five others were killed on the Canada frontier, and four in battle with the Indians. Of those who died in service, *two* reached the rank of general, and *eight* that of field officers. Of those who are now in service, (7,) one is General JOSEPH G. TORRES, chief of the corps of engineers, who served on the Canada frontier in the war of 1812, and at the siege of Vera Cruz. One is Col. SYLVANUS THAYER, who served in the war of 1812-'15; who was superintendent of the Military Academy from 1817 to 1833, and to whom it is indebted for a large part of its usefulness. Of these gentlemen, we shall have more to say, when we refer to the forming period of the institution. Another is Colonel RENE DE ROSSY, who was distinguished in the battle of Plattsburg, and became superintendent of the Academy on the retirement of Col. Thayer. Of those who resigned or were disbanded, many died young; one became a member of congress and politician; and another, Col. WILLIAM McRAE, was a remarkable man, distinguished for gallant conduct in the battle of Niagara and Fort Erie, a member of the board of engineers, and of cultivated mind; he resigned from the army and became surveyor general for Missouri and Arkansas, and finally died of cholera at St. Louis. Of the whole eighty-nine, who were commissioned prior to 1813, but twenty-one were alive in 1850, and several others have died since. The few

* The first diploma, which we suppose was a manuscript certificate, was the one given to the then Cadet SWIFT, and signed by Captains Barron and Mansfield.

who now remain have seen more than half a century's service in useful employments. Perhaps it should be mentioned to the advantage of the Military Academy, as a school of physical education, that at the end of half a century, twenty of its pupils out of eighty-nine, should be yet alive. In twenty years of civil life, as appears from the United States census of 1830 and 1850, more than the same proportion of youth between ten and twenty years of age perished. The general strength and health of the pupils of West Point are beyond a doubt greater than that of the same number of young men brought up in the ordinary methods of education. This is not wholly due to physical exercises, but also to moral education, and to the care and comforts of their mode of life. Will any one deny that *discipline* is a part of moral education? Is not self-restraint, the regularity of habits, and the art of using the mind in intellectual pursuits, the most important elements of a moral education? It is to all these, and not merely the training and exercise of arms, that the élèves of the Academy owe so large a share of the health and strength of life.

In the period of its history which we have now examined, the Military Academy was really only in the germ of its existence. Like most other useful or remarkable enterprises, it was first thought of as a thing needed; then began without any clear idea of what it would become, and was then improved upon, till it grew to be of magnitude and importance.

PERIOD II.—1812—1825.

The Academy, in its germinal existence, whose history we have briefly traced, was obviously inadequate to supply the army and country with young men instructed in the art of war. Congress authorized the appointment of a large number of cadets. But the President did not act upon it, because there were neither professors, nor books, nor quarters, nor material at West Point for their training. In 1808, Mr. Jefferson recommended an enlargement of the Academy. In 1810, Mr. Madison did the same. In vain, however, were these recommendations, till the nation was roused from its indolent repose by the sudden shock of war. In 1811, the battle of Tippecanoe electrified the people. The war-whoop sounded on the north-western frontier, and the aggressive conduct of Great Britain became insufferable. War was an imperious necessity. Then it was that the use if not necessity of an institution for military training became obvious to all reflecting minds. In April, 1812, the act was passed which erected the frame-work of the pres-

ent Military Academy. As this legal outline has been little changed since, it is necessary that we should look to its provisions, for correct ideas of what the law intended, and what has been substantially carried out in its growth and development.

1st. It was provided, that the number of cadets might be increased to two hundred and fifty, and attached at the discretion of the President as students to the Military Academy at West Point, and be subject to the regulations thereof.

2d. That these cadets should be between the ages of fourteen and twenty-one, and previous to his appointment should be well versed in reading, writing, and arithmetic.

3d. That the Military Academy should consist of the Corps of Engineers, the Professors of Philosophy, of Mathematics, of Engineering, with their assistants, and the teachers of French and Drawing.

4th. That when any cadet shall receive a regular degree from the Academical Staff, he shall be considered a candidate for a commission in any corps for which he shall be deemed competent.

In addition to these provisions for education, money was appropriated for buildings and books, and for a band of music. The expenditure provided for was very small, compared with the need of the Academy; but it was enough for a beginning. It was far easier, as we shall see, to provide for all its material wants, than to bring it into that state of moral and intellectual discipline, which was essential to the attainment of great results. The institution, in its former period, was in an inchoate condition. A few young officers, raised up partly as teachers, and partly as pupils, without a course of studies, without regulations, and without discipline, could furnish no just ideas, from experience, of what a highly intellectual, well-ordered school of science should be; and accordingly the want of just ideas of education was precisely what first stood in the way of making West Point what it subsequently became.

For more than five years there was a wrestling between old and new ideas. There was a positive ignorance of what high education should be. In fact, the country had no models for it. Then there were old habits to overcome. Lastly, there was a willfulness on the part of some in authority, opposed as long as opposition was possible, to any new idea of things. For people are aware, in this day of change and novelty, how strongly the *vis inertia* of intellectual habits opposes intellectual improvement. This very *vis inertia*, at first, almost nullified the power of law itself to improve and enlarge the studies at West Point. How it acted we shall see. The first

difficulty at West Point was, (after preparing the accommodations and material) in complying with the spirit of the law, and placing the academic instruction on the high ground really intended. To understand this we must here advert to some provisions of the law which were either overlooked or neglected. First, the law expressly recognized an *Academic Staff*, who should confer degrees. Secondly, that the cadets of West Point should be *students*, subject to the regulations of the Academy. All this evidently meant that these two hundred and fifty young men should be placed, like students in college, under regular academic instruction, and that the professors and teachers should constitute an academic faculty, with power to regulate the education of the cadets, and confer degrees according to merit. Ultimately this was accomplished; but it took much effort on the part of the Professors to bring the military authorities into a just conception of this scheme. During the years 1812 and 1813, little was done except in commencing buildings, buying apparatus, appointing the cadets, and getting ready for the real business of the institution. Here we must record the first academic faculty organized at West Point. The professorship of Natural and Experimental Philosophy, which was higher in rank and emoluments than the others, was instituted expressly for Col. JARED MANSFIELD, who, having retained his commission in the corps of engineers, while he was surveyor-general in the north-western states, was now (October, 1812,) appointed to the same professorship which he held ten years before. ANDREW ELLICOTT, who had been astronomer of the United States, and had a wide reputation for mathematical knowledge, was appointed professor of Mathematics, in September, 1813, at which time, also, ALDEN PARTRIDGE was appointed professor of Engineering. The teacher of drawing was CHRISTIAN E. ZOELLER, reappointed; and of French, FLORIMOND DE MASSON. This was the first academic faculty. Subsequently, the principal professors were allowed assistants, and other teachers were at still later periods provided in the departments of Ethics, Tactics, Artillery, Chemistry, &c., as the institution was enlarged, and its wants were better known. The gentlemen above named were, however, the first professors and the first faculty. They had the real labor and responsibility of taking the initial steps, and to a large extent, of forming the Military Academy. At the very first step a difficulty occurred, which could not have been anticipated. Captain ALDEN PARTRIDGE, (who was professor of Engineering) was superintendent of West Point, from January, 1815, to November, 1816—nearly two years. He was a man of strong will; of in-

dependent and rather eccentric ideas, who quite naturally as a military man, long resident at the Point, wished to forget that the law required the education of the institution to be decided by an academic faculty, and governed by regulations. He chose rather to remember that it was a military post, governed by a military commandant, and sought to gratify his own ambition by grasping its sole direction. Professors Mansfield and Ellicott, who held no command in the army, took a different view of the subject. They justly thought, that the object of the institution was to give a thorough *scientific education*, especially adapted to the art of war; that this required discipline, and a course of studies systematic and complete; and that all this was evidently contemplated by the law, which said that the Academy should be governed by regulations, and hence an academic faculty. This difference of opinion was vital. It led to a controversy of two years, which belongs to the private rather than the public history of the Academy. Little of it was known to the public, and we are now concerned only in the issue. Had the views of Captain Partridge prevailed, the institution never could have become what it is.* Fortunately, the Professors had the law on their side, and also the good opinion of the administration, and eventually gave to the scientific college the cast and features which it now has. For three years, between 1814 and 1817, this internal controversy continued, gradually tending to give the Academy a systematic organization. General JOSEPH G. SWIFT, (head of the corps of engineers,) who was officially inspector of the Academy, took up his residence at West Point, in November, 1816, but remained only two months. While there, there could be no controversy, as to the government of the Academy, since the commander of engineers was legally its chief. After the removal of General Swift, Captain Partridge, as senior officer, again took command. It was determined, however, to remove him; and the Government most fortunately hit upon an officer, whose character, education, and accomplishments, most eminently fitted him for the post of governing, and disciplining the young men, who were in turn to become the *savans* as well as the ornaments of their country. This officer was SYLVANUS THAYER, a native of Massachusetts, commissioner in 1809 from West Point to the engineer corps, and who had recently traveled in Europe, examining the military schools of France and Germany. The arrival of Colonel Thayer constitutes

* Captain Partridge, who was a useful and energetic man, had subsequently full opportunity of carrying out his popular views in the military schools of Norwich and Middletown, which he founded by his own efforts.

the most important epoch in the history of West Point. Why it is so will appear evident when we trace out the *scientific culture* of the Academy, and the discipline which it furnishes. Up to 1813, we have seen that the Military Academy was merely a small company of officers and cadets, who, being stationed at one post, were required while there to pursue certain mathematical and military studies. It had no one element of organization. From 1814 to 1817, professors Mansfield and Ellicott were struggling with no more than partial success, to give it organization and systematic instruction. But, in 1817, Colonel Thayer, who had seen in France what such institutions required, and whose enlightened mind realized the necessity of adopting better methods, at once coöperated with the Professors, in making a permanent and successful reform.

At this point we should notice the additions made to the academic staff, between 1816 and 1819, and the steps taken by the war department toward carrying out the views of the Professors, and Colonel Thayer. CLAUDE CROZET was appointed professor of Engineering, in March, 1817; DAVID B. DOUGLAS was appointed assistant professor of Natural Philosophy, in January, 1815; CHARLES DAVIES was appointed assistant professor of Mathematics in December, 1816. Rev. THOMAS PICTON was appointed Chaplain, and professor of Ethics, in July, 1818. THOMAS GIMBREDE was appointed teacher of Drawing, in January, 1819. Major JOHN BLISS, instructor of Tactics, in April, 1818; Lieut. GEORGE W. GARDINER, instructor of Artillery, in September, 1817. CLAUDIUS BERARD succeeded Francis Masson, as teacher of French, in January, 1815; JOSEPH DU COMMUN was appointed second teacher of French, in March, 1818. Of the old professors, Captain Partridge and Francis Masson were gone; all the others remain. Thus, in 1817, when Colonel Thayer took charge of the Academy, the corps of teachers was composed of professors Mansfield, Ellicott, and Crozet; teachers Zoeller and Berard; and assistant professors Douglas and Davies, exclusive of the military teachers and of those appointed in 1818 and 1819. This was properly the Academic Staff, and Colonel Thayer was willing and pleased to have them take their proper part in organizing the institution, and raising it to that high standard of discipline and excellence to which it has since attained. In the meanwhile, the war department, under the enlightened administration of Mr. Crawford, had endeavored to supply some of the obvious defects of the Academy, by new regulations.

So far we have pursued the history of the Academy, as it progressed from a germinal idea to actual being and life. It is now

necessary to trace that system of *scientific culture* which is its essential element and peculiar character. In this the student of education may be more interested, and as we trace it still further, in its *fruits*, the education and services of more than two thousand young men, who have held the most important positions in all the departments of life, we shall be better able to pronounce a just judgment upon its merits and servicea.

Mr. CRAWFORD, one of the most enlightened men who have appeared in public affairs, was, we believe, the first to understand and attempt to remedy the defects and irregularities which Professors Mansfield and Ellicott had pointed out.* In March, 1816, "Rules and Regulations" were drawn up by Mr. Crawford. The main points in them were—

1. There shall be a Board of Visitors, to consist of five suitable gentlemen, who shall attend each annual examination.
2. There shall be a General Examination twice in each year; in July and December, and an annual vacation in July and August.
3. Cadets shall be admitted in September, and examined in spelling, reading, writing, and arithmetic.
4. A course of studies, embracing definitely all branches of science and instruction to be procured, and rules for classification shall be drawn up, and comprise a complete course of education at the institution.

According to the last regulation, a course of studies was drawn up by the Academic Faculty, and approved by Mr. Crawford, in July, 1816. This course comprised four years, and was substantially the same (although largely increased,) which has been pursued since.

The *first year* studies were English Grammar, French, Algebra, Geometry, and Logarithms.

The *second year* comprised French, Geometrical Construction, Application of Algebra, Mensuration, Plain and Spheric Trigonometry, the Conic Sections, and Drawing.

The *third year*, Natural and Experimental Philosophy, Astronomy, and Drawing.

The *fourth year*, Engineering, Geography, History, and Ethics.

In the first draft, Engineering was put in the third year; but since 1817, has been placed in the fourth. In a year or two afterwards was added the Calculus; and in a few years, Chemistry, Min-

* These defects and irregularities arose from not obeying the law, and not pursuing the ideas it pointed out. The great effort of Professors Mansfield and Ellicott, was to get the spirit of the law followed practically.

eralogy, and Natural Law. This course of studies is exclusive of the purely military part, which under the heads of Tactics, Practical Artillery and Gunnery, occupied several hours each day.

Thus, in July, 1816, the Academy had for the first time arrived at a course of studies, and a preparation for discipline. In the fall and winter of 1816, began an attempt to carry this course of studies into practical effect. We do not say there had been no studies and no attempt at classification before that, for there were, but that nothing had really been perfected in either, till after the "regulations" of 1816. If we could carry the reader back to the year 1815, and see the difficulties under which the professor of that day labored, the small material provided, and the undisciplined condition of the young men under their charge, we should give better views of the merits and services of its pioneer teachers. One or two reminiscences may possibly throw some light on the subject. Colonel Mansfield arrived at West Point in 1814, and immediately sought for his pupils. He was not like the professors of whom Gibbon speaks, remembering that he had a salary to receive, but forgetting he had duties to perform. On the contrary, he immediately asked for pupils to teach. What was he to teach? Philosophy and Astronomy. But these required prior training, and it was not till the winter of 1814-'15, that he could find any pupils. Then he found *five* young men who thought that they could go on in such studies. For want of any recitation rooms at the Point, he taught them in the parlor of his own house. As we shall refer specifically to the subject of text-books, we merely add, that the only work to be found at all suitable, was *Enfield's Philosophy*. There was no classification, and in a few months these five cadets were commissioned. They made the first class in Philosophy, taught at West Point.

Again, there are some who will recollect Professor Ellicott, sitting at his desk at the end of a long room, in the second story of what was called the Mess Hall, teaching Geometry or Algebra, looking and acting precisely like the old-fashioned schoolmaster, of whom it was written,

"And still they gazed, and still the wonder grew,
That one small head could carry all he knew."

The cadets were all "boys" to him, and his kind face was long remembered. In the other end of this room, or in the next, was seen his acting assistant, Stephen H. Long, then a young lieutenant of engineers; since distinguished as a traveler, an engineer, and a man of science. The text-book used was "Hutton's Mathematics," and

at that time the best to be had. Mr. Hutton had been a professor at Woolwich, England, and his treatises were plain, simple, easily understood, and therefore well adapted to beginners. It was, however, very deficient both in extent and analysis. It was a good text-book then, for there were no cadets trained to pursue deeper or more analytical works. With Hutton's Mathematics, Enfield's Philosophy, and plain right-lined drawing, and nothing which could be called engineering, did the cadets of the Academy get along, without roll, classification, or graduation, till the close of 1816.

In August, 1817, as we have said, Colonel Thayer became superintendent at West Point; and in the course of the next four or five years the Academy passed through the great changes which brought it from the inchoate to the crystallized state in which it now appears. The most important of these changes relate to scientific culture; and we shall best describe them by narrating the *actual work* the classes then pursued, and the change of text-books. The first step was taken, as we have seen, in March, 1816, by the regulations of Mr. Crawford, which required classification, a course of studies, and annual examinations. Some steps towards these were taken in 1816, but very imperfectly. In 1817 the system of classification was first systematically begun. CLAUDE CROZET, a French officer under Napoleon, and a pupil of the Polytechnic School, was appointed professor of engineering, in March, 1817. The annual examination coming on in June, the course of studies in his department did not regularly commence till September, and the second or junior class* of 1817-'18 was the *first* class which commenced thoroughly the severe and complete course of studies at West Point. The *labors* of that class in the years 1818 and 1819 may have been equaled, but certainly have not been surpassed. It was not a brilliant class, but its labors were not the less on that account. It had not merely to pass over the plain turnpike road of science which is now made so easy to those who follow; but, like the pioneers of an army, had to cut down the obstructions, make their own bridges, and to no small extent, furnish their own munitions. Let us look into the class-room of 1817, as Professor Crozet advances to instruct those

* The Class here spoken of graduated in 1819. Of its living members, are HENRY BARRETT, late Superintendent at West Point; EDWARD D. MANSFIELD, Commissioner of Statistics for the State of Ohio; JUSTIN DIMMOCK, late Commander of Fortress Monroe; DANIEL TYLER, a distinguished Engineer and General in the Army of the Potomac; WM. H. SWIFT, a distinguished Engineer, and President of the Illinois Canal Company; JOSEPH HANER, a Civil Engineer, Judge, and Planter, in Louisiana; and Major TENNELL, distinguished as a Topographical Engineer in the War with Mexico.

Among the dead was GEORGE H. WHISTLER, the most distinguished Civil Engineer our country has produced.

young men in studies, which were not only new to them, but entirely unheard of, and in which the language to which they were born and bred furnished not a single text-book. Professor Crozet was to teach engineering; but when he met the class, he found not one of them fit to learn engineering. These were branches of science, and its affiliations, essentially necessary to engineering, which they had never been taught. What was he to do? All he could do obviously was to supply these preliminary studies before he could commence in his own department. In other words, he must begin by becoming a teacher of mathematics, and drawing. The surprise of the French engineer instructed in the Polytechnique may well be imagined when he commenced giving his class certain problems and instructions, which not one of them could comprehend or perform. Among these preliminary studies was Descriptive Geometry, not an original and distinct science, but which by *projecting* geometrical figures and problems on co-ordinate planes, gave a more facile and practical mode of *representing* (as its name implies,) as well as solving many geometrical and practical problems. This, too, required an accurate knowledge of mathematical and perspective drawing, and its various minor but important arts. We doubt whether at that time more than a dozen or two professors of science in this country knew there was such a thing; *certainly* they never taught it, and equally certain, there was not a text-book in the English language. Perhaps this is not surprising, when we reflect, that this new application of geometry was scarcely thirty years old. Monge, a French savant, was, we believe, the author of this system, about the beginning of the French Revolution. Crozet meant to begin with Descriptive Geometry, but fortunately, the class was not in the last year of the course (in which engineering has recently been taught,) and could spare some time for mere mathematics. But, a new difficulty arose. There was no text-book in English, and none to be had just then in French. Geometry is not a thing to be taught orally. What is to be done? It was here at this precise time that Crozet, by aid of the carpenter and painter, introduced the *black-board* and chalk. It is a very simple thing, and so is every thing which is useful; but we know of no mere adjunct of teaching, so useful as the blackboard. To professor Crozet, so far as we know, is due the introduction of this simple and useful machine. He found it, with many other things, far superior to the English methods in the Polytechnic of France.

We now see Crozet with his blackboard before him, chalk in hand, and animated, intellectual face, about to teach his class a new sci-

ence, without a text-book. Again he meets a new difficulty. He does not more than half understand the American language. This difficulty is only to be overcome by practice. With extreme difficulty he makes himself understood. With extreme difficulty his class comprehend that two planes at right-angles with one another are to be understood on the same surface of the blackboard on which are represented two different projections of the same object. But, at last it is done. The Professor labors with inexhaustible patience, and the pupils are pleased to receive into their minds entirely new ideas. The first problems are drawn and demonstrated on the blackboard, by the Professor; then drawn and demonstrated by the pupils, and then accurately copied into permanent drawings; and thus this class were taught in the most important and valuable method of imparting true knowledge, which has been given to mankind since the days of Socrates. Fortunately, professor Crozet had brought with him the complete drawings of the French Polytechnique, so that he was not, in this particular, obliged to depend upon himself. The path of his instruction soon became easier, and then this class completed their course in drawing, mathematics, and Engineering.

In the study of Natural Philosophy and Mechanics, the way was scarcely less difficult. We have already said, that Enfield's Philosophy was the first book on that subject. But this was not enough. Professor Mansfield looked around in vain for any suitable book on Mechanics. At last, *Gregory's Mechanics* was adopted. It was a book without any analysis, and probably written only for scientific men. Yet, it was the best to be had. For several years after, this work still remained the best book on Mechanics. Whether the class who first studied its mysterious pages acquired as clear and extensive ideas of the subject as those who have since passed over smoother roads, may be doubtful. It is certain they had more arduous labors. We have said there was no text-book on engineering, as a science. When the class which had commenced Descriptive Geometry, with professor Crozet, (then the second or the junior class,) had become the first class, they were instructed in engineering by drawings from oral teaching, on the blackboard. The various modes of laying out fortifications, of bridging, of defiling, of materials, ordnance, &c., were taught by professor Crozet. For several years no text-book in engineering was found. It was not till 1823 that a French treatise, entitled the Science of War and Fortification, was translated by Major O'Connor, and for several years used as a text-book. It will be seen that the class which, in 1817,

1818, and 1819, commenced the new culture and discipline of West Point, had an arduous and difficult task. It is, notwithstanding, quite probable, that this severe exercise of the mind, in making paths for itself, where there are no guide-posts on the way, no regal road, is a better discipline than that furnished by the more easy and systematic methods.

Perhaps no one step taken at West Point, has contributed so much to intellectual culture as the Merit-Roll. The effect at the Military Academy is totally different from what it would be at any civil institution. For there it determines *rank*, which is the great object of military men. Forty young men may be commissioned on the same day to the same grade, but through all their after life, even when they return to civil life, the distinctions of the merit-roll will follow them, and be counted for or against them. In the very first day of their commissioned service, the distinction is a practical one, for there are great and practical advantages in certain arms of the service over others. Thus the engineer officer, without any actual care of men, or responsibility for any movements, and almost always stationed at comfortable posts, has great advantages over other arms. The Artillery has advantages over the Infantry. Thus the cadet, commissioned from West Point, has determined for himself, by his position on the merit-roll, not only his rank in the army, but almost his position in human life. The merit-roll, as it now exists, graduated in all departments, and summed up at the close of the course, was not adopted at once, but was the work of several years.

In February, 1818, the superintendent of the Academy was directed by the Secretary at War to publish in the Army Register the "names of cadets who are distinguished for attainments, and meritorious conduct, not exceeding five in each class, specifying the studies in which they may excel."

We well recollect with what excitement and interest this communication was received by the cadets of that day, especially by those who thought themselves within the probabilities of that distinction. It unquestionably stimulated most of the young men to much greater exertions than they would otherwise have made. In a few months after, the merit-roll was fully established in the classes, and the rank of the graduating cadets determined by it.

There has been much discussion, and no small doubt, as to the real effects of emulation. There is undoubtedly a bad sense, and a bad effect attached to that term. But is that a necessary consequence of the merit-roll? Is not the merit-roll adopted, so far as it

can be ascertained, in all departments of human life ! Who would risk himself with an ignorant engineer, if he could get a skilled one ! Who would employ a poor clerk if he could get a good one ! The objection made to emulation is that it excites wrong motives. However this may be, and however casuists may regard it, it is quite certain that the merit-roll is the strongest stimulant to intellectual exertion which can be presented to young men. Nor can we perceive, after much observation on its effect, that it has impaired the purely moral motives of action, or excited evil passions, to be remembered in after life. At West Point all the moral actions which are visible and tangible are brought within the scale of the merit-roll, and often the fate of a young man is determined far more by his standing in conduct, than in studies.

II. STUDY, DISCIPLINE, AND FRUITS.

Having thus sketched the historical progress of the Academy in the path of scientific culture, it remains for us to state what it *is* ; what it has *done* ; and what men have *conducted* it.

Without entering into minute details, we shall very briefly state the present methods of study and discipline. The leading studies in their order are Mathematics, Natural Philosophy, Mechanics, Astronomy, Engineering, Chemistry, French, Tactics, Artillery Practice, Mineralogy, Ethics, and History. This course is wholly scientific, the practical part being adapted strictly to military purposes. In the early period of the institution, some attempt was made to introduce the classics, but it was found impracticable, with the limited time allowed the cadets. Indeed, it may be doubted whether any institution can have more than *one tone*. All branches of human learning may be embraced in the proper schedule of university instruction ; but has any university given equal attention to all branches of education ? What are called colleges in our country, all aim at fitting young men for the civil professions—Law, Medicine, and Theology. They therefore make the classics the principal branch of study, and are right, since Law, Medicine, and Theology have their foundation deep laid in the classic ages. Literature also is a part of professional knowledge, necessary to adorn and illustrate the history and theory of professional science. Hence, in these lines of instruction specially have run the studies of the college, and from these is derived the *tone* of college education. The object of the Military Academy was totally different. It was not civil, but martial life, for which the young men were fitting. It was neither a metaphysical discussion, nor a hair-splitting argument

on the law, in which they were expected to excel. They were to learn the sterner arguments of the battle-field; to arrange squadrons for the hardy fight; to acquire that profound knowledge of the science and materials of nature, which should fit them for the complicated art of war; to defend and attack cities; to bridge rivers; to make roads; to provide armaments; to arrange munitions; to understand the topography of countries; and to foresee and provide all the resources necessary to national defense. This was the object of the Military Academy, and to that one end it was adapted. The method of education may be happily stated under the heads of Studies, Physical and Moral Discipline, and of Military Exercises.

1. The subjects and method of study we have already mentioned; Mathematical, Philosophical, Mechanical, Chemical, Military, and French, the military language. These being the chief topics of study, the students and the time were suitably divided into classes and hours. There are four classes, occupying four years, as usual in colleges. There are ten months of study, the intermission being in the hot months of July and August, when only military studies and exercises are pursued. The studies of a day are necessarily modified, by the introduction of military exercises which consume much time. The regular *study hours* (which include also the recitations,) are from 8 A. M. to 1 P. M., and from 2 P. M. to 4 P. M., making *seven hours* of study and recitations. Generally *four hours* more are consumed in military exercise and discipline, being the hours before breakfast, and after 4 P. M. Thus *eleven hours* are generally occupied either in study or exercises. The evening also after dark, is devoted to study in so far that with occasional exceptions, the cadets are required to be in the rooms. In this division of time we find a *continual alternation of study and exercise*; leaving the least possible time for idleness, or mere amusement. Indeed, the problem of education is to find the *maximum of development*, with the *minimum of idleness*. To this should be added, that the development should be co-relatively, intellectual, physical, and moral.* It is not merely ignorance, but *unequal* development, which is the great misfortune of mankind. How many great and glorious intellects have been lost, because there were no counter-balances to the

* We use the word *moral*, in preference to spiritual, because, in its comprehensive sense, including the latter; but by no means intimating, that in this Christian country, we should make any place of education a mere reproduction of Persian or Greek models. Our servile imitation of the Ancients, often makes us forget that we are neither Spartans nor Romans. The man who attempts at this day to revive the institutions of Pagan Greece, is as false to true Philosophy, as he is to true Christianity.

force which, inclined in only one direction, carried them off into a wilderness of fruitless objects!

In the course of studies pursued at West Point, the main feature is the *method* of study. We can give an idea of this in a few words. The very first thing done at West Point is to *recognize* the fact, that *intellects are unequal*; in other words, that of a given number of young men, commencing a severe and elaborate course of studies, there will be some who can not endure it, and can not get through; and others, who while they will come up to the requisites for graduation, can not equal a third class, who are capable and ambitious of receiving the highest style of education. This recognition is effected thus: a class enters the Academy, we will say *eighty* in number. This class enters on the 1st of September; and on the 1st of January there is a semi-annual examination. This four months of study by that class is regarded as a period of *probation*, which will furnish some test of the abilities of its several members. When the January examination is held, some are found deficient, and they are at once discarded. Then the remaining class are numbered, according to what is then their *apparent* merit, and they are divided into *sections* of from fifteen to twenty each; those highest on the roll being placed in the first section; those next in the second, &c. Usually there are four of these sections. The professor usually teaches the first section; his assistant the second, and so on. It is obviously a decided advantage to be in the first section, and there is usually a struggle to get there. But, a cadet may change his position in his class, at any time, by his own efforts. This he can only do, however, by more strenuous efforts. Then, if he be in the second section, he may at the end of the year be found to have a higher aggregate of good marks in study and conduct than some of those in the first section. In that case he will be transferred. Thus the ambition of the student has always placed before it the possibility of higher class rank, and if his talents and industry are capable of it, he will attain it.

The *method* of study at West Point, which in all institutions is the important point, is the *rigidly demonstrative*, in those studies which admit of it, and the *positively practical* in those which do not. The course of studies requires this, if the subjects of study are to be thoroughly understood. There is little of the purely metaphysical or transcendental known or pursued at West Point. No abstract speculations or merely theoretical inquiries occupy their minds. It is the actually knowing, and doing, in which they are engaged. As far as can be made practically useful, the *oral* method

is pursued. In mathematical and mechanical, engineering and tactical studies, this is largely the case. The blackboard, we have said, was first introduced into this country by Professor Crozet, at West Point. How largely this is used in all institutions of education now, our readers well know. It has proved one of the most efficient means of instruction at West Point. The student of the mathematical section, for example, begins with a text-book on Algebra, in his hand; but, it is on the blackboard where the workings of his mind are chiefly exhibited. He learns what he can from the book, but, on the blackboard the professor makes him trace out what he has done, not merely by telling what he knows, but what he don't know; detects his weak place, and forces his mind (so far as such force is possible,) to *think*, and think rightly on the subject before him. This *thinking*, we need not tell experienced teachers, is the great thing which education is to teach. If a student can not, or will not think studiously and industriously, he will not long remain at West Point. There is not, as in civil colleges, the great fallow field of poetry, history, and metaphysics, in which he may show his classical professor that he has acquired rich things, although ignorant of mathematics. It will not do to say that he has wandered with Greeks and Romans around the ruins of Troy, or by the waters of Babel. There is no such compensating principle in the system at West Point. The cadet must study what is set before him; must study it hard; must think upon it, and discipline his mind to systematic modes of thought.

2. This leads us to the Specific Discipline of the Academy. This is partially included in what we have already said. The intellectual discipline is mainly maintained by the method of study; but there is a grand and perfect system of discipline, which we may briefly describe. The term DISCIPLINE is derived from disciples, *discipulus*, and means originally *teaching* of knowledge; but this is not all, nor entirely its modern sense. Discipline is *training* in knowledge and virtue, in order and diligence, in good conduct, and good habits. To do this requires a control of the body as well as mind; of food and raiment; of time and exercise; as well as the imparting of facts and ideas. It was in the former sense rather than of the latter, that the word EDUCATION, (to lead forth,) was understood among the ancients, and so far as they went they were right. It was this *discipline* in virtue, temperance, courage, fortitude, and self-denial, which was taught in the days of Persian Cyrus, and Greek Leonidas. It was adopted among the early Christians; but, Cowper well said:—

"In colleges and halls in ancient days,
When learning, virtue, piety, and truth
Were precious, and inculcated with care,
There dwelt a sage called Discipline.

* * * * *

But Discipline, a faithful servant long,
Declin'd at length into the vale of years."

Nothing can be more certain than the decline of "discipline" in modern civil institutions. "Colleges and Halls" advertise a much enlarged course of studies; they call to their aid the most learned professors; and they proclaim "all the modern improvement," and yet it is quite certain, that a pupil can walk for years their learned halls, and at last receive the honors of graduation with a very small share of either learning, diligence, or virtue. Civil institutions may be most excellent for all, who either by early care or natural inclination are willing to use their opportunities for their intellectual or moral advancement. Nay, more, all open irregularities will be corrected, and all possible means afforded for spiritual improvement. But there are two things impossible to overcome—the popular and almost universal license allowed youth, (under the name of freedom) and the total want of any ultimate power to restrain it. These stand directly in the way of thorough discipline. At a Government Military Institution, this is directly reversed. The very first thing taught is *positive obedience*. The cadet can not be a week at West Point without knowing that he can not govern himself, but must be governed by others. If he is either not fit or not willing, the faculty meet the case in short and decisive language: "If you are either unable or unwilling to pursue the course of study and discipline, we direct you must instantly go. There are plenty more worthy to fill your place." There is, then, no alternative for the cadet but to go forward, and exert himself to the utmost, or not to go at all. There can be no loitering by the way, to slumber in idleness, or waste in dissipation, or pursue the pleasures of literature. There is no doubt that this stern and constant discipline is the great merit of West Point. It acts on the whole conduct and character. We have already said, that the class-standing determined by the merit-roll, determined their position relatively, and their rank in the army, and by consequence, great distinctions and differences in after life.

Let us see how this merit-roll is made up. The *first* thing done is to *mark* each cadet with a *figure* (having relation to an agreed scale of numbers,) for every act done or undone, in study, conduct,

drill, attention, &c. The *second* is to agree upon the *relative values* of each study, conduct, &c., in aggregating the whole positive or negative performance of a cadet, in his whole course at West Point. The summation of these for any one year gives his class-standing for that year, and the summation for the whole course gives his standing at the time of graduation, and his rank in the army.

Formerly, and we believe yet, the mode of marking and summing up for standing, was this. Each professor or teacher marked for one performance one of seven marks, from—3 to +3. This being purely artificial may be changed. But it is in this way the marking is made. Then in regard to *relative values* of study and conduct, the scale formerly was:—

Mathematics,	300.
Philosophy and Mechanics,	300.
Engineering and Military Science,	300.
Chemistry and Mineralogy,	200.
Moral and Political Philosophy,	200.
Conduct,	300.
Infantry Tactics,	150.
Artillery Practice,	150.
French,	100.
Drawing,	100.

To obtain 2,100, the aggregate, a cadet must never have failed in a recitation, or been absent from a military duty, or derelict in the least particular. This most rarely if ever happens. Not to fall short more than 100, is evidence of very high standing.

It is evident, that under this system, emulation is highly excited, and, in fact, there must be a constant, unremitting effort to graduate at all. The general result is, that not more than one-half of all appointed are graduates. At the first semi-annual examination, many drop off; several more at the end of the first year, and more at the end of the second. Nearly all who survive the second year are graduated.

The only remaining point, peculiar to the system at West Point, is that of Military Exercises. As a Military Institution, this is a necessity, but it has also a great advantage as a means of Physical Education. This is a kind of education too much neglected, and for which civil colleges afford little opportunity, and no encouragement. The ordinary games, amusements, and walks in the field are relied upon to afford development to the body, and the natural tastes the only guide. So thought not Persian statesmen, Greek Philosopher, or Roman Senator. In contrast, a systematic

education of the body was a principle, and a practice, with all the civilized nations of antiquity. There was a constant attention to this in the training of youth; and the Olympian Games, the Gymnastic Exercises, and the Gladiatorial Shows, all had reference to this principle. If heathen nations could thus wisely attend to the healthy development of their bodies, can Christian people safely neglect it? There is no question that the Christian law of temperance, daily labor, good temper and amiable dispositions will do much to preserve health and strength. The health of the mind goes far to make the health of the body; but we must recollect that all students, properly so called—men who are set apart for the cultivation of learning and science—the *savans* of a country, are cut off at the very beginning, from that *daily labor* of the body, which in the dawn of human history was declared to be the necessity of man's existence. There is, therefore, a positive need of supplying by some system of salutary exercises, the place of that labor in which the farmer and mechanic are constantly exercised. What shall it be? Our common classical institutions have left this almost entirely to the student's own choice. Several hours of the day are left to the student to employ as he pleases. Does not experience prove, that he is quite as apt to employ this in novel reading, or playing cards, or visiting, or (in the case of an ambitious pupil,) in studying or reading the classics, as in any systematic method of exercise? Let the early dead of consumption, the victims of dissipation, and the unhappy subjects of chronic diseases, teach the living, that education consists not merely in spurring the mind on to intellectual feats, however admirable. The bird soars through the mid-heavens, but soars on the strength of his wings; and if he had the soul of Socrates, would still fall, when they are exhausted.

The military exercises, at West Point, accomplish some great results. They give an admirable exercise to the body, and they occupy time which might be wasted, and they compel the cadets to give up late night studies. Let us begin with the last. Nothing is more common among the ambitious students of colleges, than to sit up late at night. To burn the midnight oil, in order to accompany every thought in the realms of Plato, or fight with Hector on the plains of Troy, or pursue the phantom of metaphysics, or the genius of literature through the bright worlds of fiction, is the common boast of scholars. They have little thought, till too late, that life was shortened, and happiness impaired, by every hour taken from the natural period of rest. At West Point this evil is avoided, not so much by force of command, as by that of wise arrange-

ments. At the dawn of day, even in the shortest days, the shrill fife and rolling drum summon the cadet to his morning duties, and with the exception of the hours of meals, there is one incessant pressure upon him for bodily and intellectual labor, till ten at night. The results of this is, that when the hour of retirement comes, he must have more than human strength, who is not ready and willing to lie down and sleep. There are, of course, exceptions; but, at West Point, they are rare. The lights are put out at 10 o'clock, and the weary student is ready to retire. Thus, the system of discipline at the Military Academy at once strengthens the body, stimulates ambition, prevents idleness, and compels the mind to pursue the objects of reason, rather than the charms of imagination.

Having thus traced very briefly the history, studies, and discipline of West Point, it is only just to say something upon the fruits it has produced. These are divided naturally into two classes; the work of the *Professors*, and the performance of *Graduates*. The former is little noticed in the accounts of our colleges, except in the reputation of some distinguished men; but the latter, (the divines, lawyers, and statesmen who have graduated,) make the glory and the ornament of the triennial catalogue. Let us see if something has not been produced by West Point, which, in regard to the peculiar objects and teaching of the Academy, may bear a favorable comparison with the catalogue of any institution for the last half century. We do not mean in regard to the learned professions, for if West Point had excelled in these departments, it would have utterly failed in those for which it was made. But, we mean in the great field of science and of usefulness. First, let us look at some of the fruits produced by its professors, especially in the production of *text-books*. In the history of instruction at West Point, we have stated the total absence in the beginning, of text-books on some subjects, and the unfitness of those on others, even the common studies of Mathematics. The first text-book on Descriptive Geometry, published in America, and we believe, the English language, was prepared by Professor Crozer; but, as he then understood our language imperfectly, and had little taste for authorship, it was soon supplanted, by a complete treatise prepared by Professor Davies. On that subject, as on the subject of Engineering, there was no systematic treatise; and for a time, West Point got along by oral teaching, and such collateral aid as could be had. The utter deficiency of suitable books may be known by the fact, that the first really tolerable text-books on mathematics were translations of La Croix, Bourdon, Biot, &c., French authors. The French methoda

of writing and teaching science are, on most topics, the best. Their style is clear and analytical. The English treatises are clumsy, being what is called in literature, elliptical, having vacancies in the reasoning, to be supplied by the student. The next great and permanent improvement in books, were the mathematical works of Professor DAVIES, a graduate of 1815, when the Academy was yet in a chrysalis state; he was several years a teacher before he conceived the idea of supplying a new series of mathematical text-books. His first plan was to adopt the best French works as a basis, and modify them, so as to be adapted to the American course of instruction. In this manner were prepared "Davies' Legendre," (Geometry,) and subsequently "Davies' Bourdon," (Algebra.) Other treatises were prepared on his own plan, and thus, for many years, Professor Davies pursued the quiet and laborious task (independent of other avocations,) of preparing an entire course of mathematical text-books. In time he modified these again, so as to fit them for the best colleges, and the higher schools. From the smallest mental arithmetic, to the profoundest treatise on the Calculus, he has produced clear and admirable text-books on every topic of mathematical studies. Many other good books have been prepared by professors in colleges, but there is no part of the United States in which some one of Davies' works is not taught in schools and colleges. Gradually, the civil institutions have been, in some degree, brought up to the standard of West Point, in mathematical studies.

In more recent years, Professor BARTLETT has published his treatise on Optics; Professor CHURCH, on the CALCULUS, and Professor MAHAN, on Field Fortification, and a treatise on Civil Engineering. Various other works on military subjects have been contributed to the stock of knowledge, by graduates of the Academy.*

Thus have the graduates of West Point, by disseminating in text-books, and teaching the higher knowledge, and better methods pursued there, in fact, and beyond dispute, *elevated the entire standard of education in this country.* Contrast, for example, the text-books of Day, Hutton, Enfield, Gregory, &c., which were the only ones to be had on mathematical science in 1818, with those now in use at West Point, New Haven, or Princeton. Contrast the methods of

* The authorship of West Point has been quite extensive; too much so to enumerate here. Among the works of its graduates, we may mention the "Political Manual," "American Education," and Statistical Reports by Edward D. Mansfield, the "Review of Edwards on the Will," by A. T. Bledsoe, and the Military Tactics of Generals McClellan, and Halleck. The Educational Works of Mr. Mansfield have been before the public for many years, and studied in all parts of the United States. In this class also may be mentioned the editorial labors of some twenty of the graduates, some of whom have had no small influence on public affairs.

study before the blackboard, the art of drawing, the system of rigid demonstration, and of exact scales of merit were introduced, with those now in use in the higher schools of science, and we shall be satisfied that West Point has done a great and most useful work in elevating the standard of education. This is one fruit of its production, which has been altogether too lightly estimated. If it be of importance to increase the number of blades of grass, it is of much more importance to increase the number of minds fitted to enjoy the works of God, and use beneficially the gifts with which he has intrusted them.

A more obvious and commonly remarked fruit of West Point, is the *men*, laboring in their vocations, which it has produced. It is impossible here, (though it would be a labor of love,) to note the individual examples of merit and usefulness, among those whom West Point has sent into the service of their country. We are here limited rather to a statement of general results. It may be done briefly; and since we have seen no Register later than 1850, we must deal in round numbers. These, however, will approximate the precise facts. They are there statistically:—

Whole number of Graduates, (about)	2,000.
Killed in battle,	80.
Died in service,	300.
In military service of the United States now,	800.
Have been in political service (ministers, gov- ernors,) mayors, and members of congress, and of legislature,	80.
Other civil and state offices,	100.
Lawyers,	110.
Clergymen, (including two bishops,)	16.
Physicians,	110.
President of colleges, professors and teachers,	100.
Authors, editors, and artists,	25.
Civil engineers, and officers of R. R. and canals,	180.
Merchants, financiers, farmers, and manufac- turers,	140.
Officers of militia, and volunteers, (not of the army,)	110.

Numbers have resigned, and died young, not above enumerated, and numbers of these also have died in the civil service. We have made this classification to show how largely West Point has contributed to education, civil engineering, and the professions. These were not the direct objects of the Academy; but, when long years

of peace presented no duties but that of the garrison, and no glory to the profession of arms, it was natural and proper for active and ambitious young men to seek honor and usefulness in other pursuits. Nor did the government discourage this, for it foresaw what has happened, that these young men, so highly educated in science, would diffuse this knowledge throughout the country; elevate the standard of education, and be ready when their country needed their services. This has happened. A better knowledge of the exact sciences has been carried into the colleges; the railroads and canals have been built by engineers ready furnished by the government; and now when half a million of men have been suddenly called to war, they have been largely officered by the graduates of West Point. Here we may briefly allude to the most grave fact which has been urged against the Military Academy. The best officers of the rebel army were educated there. Why is this? Is there a want of sound morals? or, is loyalty no virtue there? Neither. A part, and a *part only** of the graduates born and grown up in the south, have gone with their friends, families, and connections, into the rebel service. This was on account of social ties, and had no more to do with West Point, than had other rebels from Harvard, or Yale, with those institutions. The noticeable fact is that they were educated at the government expense, and therefore under peculiar obligations to the country. But we find a parallel in the numerous officers of the state, as well as of the army and navy, who had been honored and rewarded at the public expense, but who thought it no shame to betray their country, and conspire against its life. We in vain attempt to account for such crimes, except upon the principle of common depravity, of which history has furnished similar examples in all ages of the world.

We have come to the end of the work we proposed. The rise, progress, and fruits of the Military Academy, we have briefly, and, we trust, justly delineated. Certainly, we have no end to serve, no prejudice to gratify. We knew the Academy in its early and immature period. We have seen it grow up to usefulness and honor. We see its graduates taking their places among those who have well served their country, and well deserved its laurels. In this we are *glad*. But our memory is filled with other images. We see West Point, in the now lengthening shadows of time. We seem to see those with whom we studied freshly present, as they

* We should not forget that a large number of West Point graduates from the south, (Maryland, Virginia, Carolina, and Tennessee,) have remained *loyal*, in spite of all the influences of social and political ties.

walk the green plain, or sit before the class, or strive to teach our dull and inattentive minds. They were men worth remembering, and when, in after times, we became their friends, rather than their pupils, still more pleasant memories gathered around them. We seem to see the venerable **ELLCOTT**, like Goldsmith's schoolmaster, alike full of learning, and of kindly humor; the placid and intellectual expression of **MANSFIELD**, whose abstracted looks seemed to be searching the higher philosophy; the courtly and dignified **THAYER**, whose graceful manners and attractive conversation can not be forgotten by any who knew him; and the amiable **COURTNEY**, who though of later date, will long be remembered. He left the world in doubt, whether he was the better scholar or the better man.*

Of these, and of those like them, do we think, when we think of West Point. Nor of those alone; the place itself, where nature delights in the sublime and beautiful, rises before us. No imagination is necessary to clothe it with the hues of poetry; no books to recall the lost passages of history; no labored eulogy to bring up the memories of the dead. You can no more forget them, than you can the Pilgrims, when standing by the rock of Plymouth. Yon gray and moss-covered ruin was once the fortress of the Revolution. Yon scarcely perceptible pile of stones marks the spot where its soldiers were huddled in the winter. Yon slightly raised turf, beneath the dark shades of the cedar, was his grave, and soon, perhaps even now, that slight memorial will be gone forever. Yon little valley under the shadows of the mountain, recalls the illustrious name of Washington. Yon blue mountain-top tells of the beacon fires he lit. All around are memories; all around are sacred spots. If the Greek remembers Marathon; if the Jew lingers at Jerusalem, or the Christian pilgrim grows warm at Bethlehem, so should the American remember West Point; linger round the ruins of Fort Put, and gaze with delight on the blue summit of Beacon Hill.

* Mr. Courtney was afterwards Professor of Philosophy and Mechanics in the University of Virginia. There he died, lamented by all who knew him.

DEVELOPMENT OF INSTRUCTION AT WEST POINT.

1. Down to 1802, the instruction of the Cadets attached to the Corps of Artillerists and Engineers stationed at West Point, according to Act of Congress (May 7th, which was all that repeated recommendations of Washington and other experienced officers could obtain), was confined to military drill and practical exercises in common with other members of the Corps; but as that Corps was made up of the scientific officers of the army, and as military works were in construction under their plans and superintendence, these exercises were of great practical value, and the appointment of these Cadets in 1794, and their gathering at West Point, may be regarded as the nucleus of the Military Academy.

2. The Military Academy, established with that name, by Act of March 16, 1802, in pursuance of a Bill reported in 1800, by the Committee of Defense in the House of Representatives, of which Harrison Gray Otis was chairman, and to which an elaborate report of the Secretary of War (James McHenry, of Maryland), had been referred—consisted of the Corps of Engineers, which by the Act was organized distinct from that of Artillery, and could not exceed in officers and cadets, twenty members. The Corps was stationed at West Point, and its officers and cadets were subject to duty in such places as the President should direct. The principal engineer was made superintendent, and down to 1808 he was instructor in fortifications, field-works, and the use of instruments. Two officers, of the rank of captain, appointed without previous military experience, but with special reference to their knowledge of mathematics, gave instruction in that branch, "one in the line of geometrical, and the other of algebraic demonstration."

In 1803, two teacherships—one of the French language and the other of Drawing, was attached to the Corps of Engineers, and in 1804, F. De Masson was appointed to discharge the duties of both.

In 1808, the basis of the Military Academy, so far as related to the number of Cadets, was enlarged by the addition of two for each new company of Infantry, Riflemen, and Artillery, added to the military force; and the number in the Act of 1812, is limited to 250, which with the ten originally attached to the Corps of Engineers, fixed the strength of the Cadets at 260.

By the Act of April 29, 1812, the Corps of Engineers was enlarged, and was again constituted the Military Academy, and in addition to the teacher of the French language, and Drawing, provided in Act of Feb. 28, 1803, one Professor of Natural and Exper-

imental Philosophy; one Professor of Mathematics; one Professor of Engineering in all its branches; and for each an Assistant Professor taken from the most prominent characters of the officers or cadets, are provided for; and for the purposes of military instruction, it is ordered that the students shall be arranged into companies and officered from their own members, to be taught all the duties of a private, non-commissioned officer, and officer; and for instruction in all matters incident to a regular camp, shall go into camp for at least three months of each year, and erecting buildings and providing apparatus, library, and all necessary implements, the sum of \$25,000 is appropriated. By this act the minimum of age is fixed at 14, and the literary qualifications of candidates on entering are to be well versed in reading, writing, and arithmetic.

III. CONDITION IN 1871.

I. GOVERNMENT AND ORGANIZATION.*

A MILITARY officer, not usually below the rank of colonel, is appointed by the President of the United States as *superintendent* of the Academy, who has supreme local control over both the studies and discipline of the institution. He renders all prescribed returns, and addresses his communications to the *inspector*.

The *inspector* of the Academy is an officer of rank in the army named by the Secretary of War, who has his residence at Washington, and through whom all general orders relating to the Academy are transmitted to the superintendent at West Point. He makes an inspection of the Academy at least once in each year.†

The general staff of the Academy consists of an adjutant, a quartermaster, a treasurer, one surgeon, and two assistant surgeons.

Although the system of the Academy as regards the training of the cadets both in and out of study is peculiarly and rigidly military, the staff of instruction is separate from the staff of discipline.

Military Staff.

The cadets are organized into a battalion of four companies.

The *commandant of cadets*, usually not under the rank of lieutenant-colonel in the army, exercises the immediate command of the battalion. He is also, *ex officio*, principal instructor in infantry, artillery, and cavalry *tactics* (signifying drill).

Under the commandant are six *assistant instructors of tactics*, viz.—one for artillery; two for infantry; one for cavalry; one for artillery and infantry; one for infantry and cavalry. The four senior of these officers command the four cadet companies respectively; the two junior officers being always available to perform the routine duties of the others in case of absence. The assistant instructors must be officers of the army.

The battalion is provided with a full complement of *cadet* officers, and non-commissioned officers, who are appointed by the superintendent from a list submitted by the commandant of cadets.

To each company are appointed

1 Captain,
3 Lieutenants,
1 First Sergeant,

3 Second Sergeants,
4 Corporals.

* From Instructions for government of the U. S. Military Academy, Report of Board of Visitors for 1871, and an account by Col. McDougall in Report of English Military Commission.

† The duties of Inspector are now (1871) discharged directly by the Secretary.

The battalion staff consists of

1 Adjutant,	1 Sergeant Major,
1 Quartermaster,	1 Quartermaster Sergeant,

The cadet companies are composed indiscriminately of the four classes into which the students are divided according to their respective years of residence, the period of residence being four years for all.

The cadet officers are taken from the first, or senior class; the sergeants from the second class; the corporals from the third class. The selection is not made with special reference to proficiency in study. Those are selected who have manifested the greatest military aptitude and respect for discipline in their own conduct; although *ceteris paribus* superior standing in study would be decisive.

Staff of Instruction

The general superintendence of the studies is exercised by the superintendent, acting with the Academic Board. The immediate staff of instruction is as follows:

One professor,.....	} Military and civil engineering.
One assistant professor,.....	
Two acting assistant professors,.....	
One professor,.....	} Natural and experimental philosophy.
One assistant professor,.....	
Two acting assistant professors,.....	
One professor,.....	} Mathematics.
One assistant professor,.....	
Five acting assistant professors,.....	
One professor,.....	} Drawing.
One assistant professor,.....	
One acting assistant professor,.....	
One professor,.....	} French.
One assistant professor,.....	
Three acting assistant professors,.....	
One professor,.....	} Spanish.
One assistant professor,.....	
One acting assistant professor,.....	
One professor,.....	} Ethics and Law.
One assistant professor,.....	
One acting assistant professor,.....	
One professor,.....	} Chemistry, mineralogy, and geology.
One assistant professor,.....	
Two acting assistant professors,.....	
One instructor,.....	} Ordnance and gunnery.
One assistant instructor,.....	
One instructor,.....	} Practical military engineering.
One assistant instructor,.....	
	} Military signals and telegraphing.
One sword master.	

The Academic Board consists of the Superintendent, the Commandant of Cadets, the Professors of the Academy, and the Instructors of Practical Military Engineering, and of Ordnance and Gunnery.

All the professors and instructors, with their assistants and acting assistants, have been educated at West Point, with exception of the chaplain, the professors of French and Spanish, and the sword master. All are regularly enrolled in the military service of the United States, and subject to military discipline.

Professors and Assistants.

The professor or chief instructor in each branch is responsible for the efficiency and uniformity of the system of instruction in his own department. To this end he has no special class or section assigned to him for tuition. His time is devoted to general superintendence, and is chiefly spent in visiting the halls of study of his assistants. He does, however, take the instruction of the different sections, each in their turn, as he sees fit, and occasionally assembles all the sections of his department for lecture.

The assistant and acting assistant professors or instructors are always appointed from among officers on the full pay of their regiments who have graduated at the Academy, on the recommendation of the professor or chief instructor of the branch in which there is a vacancy to be filled. These assistants are carefully selected through means of the data of their proficiency, temper, and general character, afforded by their record of four years' residence as cadets. They are, thus, all of them previously well known to the professors to whom they are to act as assistants, and to whom they are naturally inclined to defer from old associations.

The term of duty at the Academy of the assistant and acting assistant professors and instructors is fixed at four years, at the end of which period they return to regimental service. Duty at the Academy is obligatory on every officer who may be selected for it, and is considered as part of the general service which every officer who has graduated at West Point, owes to the country; practically those only are selected to whom the duty is not disagreeable.

Admission

Each congressional or territorial district of the United States (i. e. each district entitled to return a member to Congress), is by law entitled to have one cadet receiving education at the Academy.

The nominations are made in each year by the Secretary of War, on the recommendation of the representatives in Congress of the several districts then unrepresented at the Academy, or whose

representatives are about to quit the Academy. In addition to these, the President of the United States may nominate ten cadets in each year, to be selected according to his own will and pleasure, from the community at large.

The number of vacancies at West Point in any one year varies according to the number of cadets who happen to complete their period of residence, and of those, who, not having completed their term, are yet discharged as deficient in studies or discipline, as hereafter explained. The number of yearly admissions varies from 50 to 70.

The date of admission in each year is the 1st of July, and the candidate for admission is required to report in person to the superintendent before the 31st of May, with a view to his qualifications being tested. But if sickness or any other unavoidable cause should interfere, he may present himself on the 28th of August. Except at the two periods above named, no admissions can take place.

Candidates must be over 17 and under 22 years of age, except in the case of any candidate who may have served faithfully as an officer or enlisted man in the army of the United States, either as a volunteer or in the regular service during the late civil war, who may be admitted up to 24 years of age.

Candidates must be at least five feet in height; free from any deformity, disease, or infirmity which would render them unfit for military service; and from any disorders of an infectious or immoral nature. They must be able to read and write well, and be thoroughly versed in the first four rules of arithmetic, in reduction, in simple and compound proportion, and in vulgar and decimal fractions.

Although the examination for entrance is not difficult, the prescribed tests, both medical and intellectual, are rigidly applied, and many candidates are rejected.

The examination for entrance is not competitive, but simply a qualifying examination. The competitive system commences after a cadet is once admitted; it enters into every branch of instruction, and continues in full force to the end of his residence.

Subjects and Course of Study.

The length of the course of study, for all who may succeed in graduating, is four years; its nature, after the first year, is principally professional, and the course of study is identical for all the students. The subjects are not all studied simultaneously, separate periods of the course being devoted to certain subjects, as shown by the time tables annexed.

The relative importance of the different subjects is indicated by

the maximum marks of merit assigned to them respectively, at the summing up of the results of each student's attendance at the end of his fourth year, according to the following scale :—

<i>Subjects.</i>	<i>Maximum.</i>	<i>Period of Attendance.</i>
Mathematics,.....	300	2 years
Natural and experimental philosophy,...	300	1 year.
Military and civil engineering,.....	300	1 "
Chemical physics and chemistry,.....	150	1 "
Ethics and law,.....	150	1 "
French,.....	100	2 years.
Drawing,.....	100	2 "
Spanish,.....	75	1 year.
Mineralogy and geology,.....	75	1 "
Ordnance and gunnery,.....	75	1 "
Infantry tactics (theory),.....	50	1 "
Artillery " ".....	50	1 "
Cavalry " ".....	50	1 "
Discipline,.....	300	
General merit,.....	2,075	

Practical instruction in surveying; in fortification; in ordnance and gunnery, including the loading, pointing, and firing heavy guns; in drill, or, as it is termed, the tactics of the three arms; in interior economy and regimental duty; forms an important part of the training of the cadet at different periods during his residence. In addition, the months of July and August in each year are entirely devoted to practical instruction, the battalion being then placed under canvas and relieved from all study.

During his first year a cadet receives instruction in fencing three hours in each week, from 15th October to 1st April.

During his second year he receives instruction in riding three hours in each week, from 1st November to 15th March.

Throughout the whole of his third academic year, from 1st October to 1st July, he receives instruction in riding, excepting between the 1st February and 15th April.

Throughout the whole of his fourth academic year he receives instruction in riding, three days in each week.

Swimming is not taught at the Academy. There is a good gymnasium for the use of the cadets in recreation hours, but the practice of gymnastics is purely voluntary.

Classification for Instruction.

The cadets are ranged in four distinct classes, corresponding with the four years of residence. Cadets of the first year constitute the fourth class; those of the second year, the third class; and so on. Cadets are promoted from one class to another at the end of the academic year, 30th June; provided only that they shall have

passed satisfactorily before the Academic Board in the examinations which are always held during June, failing in which, they are either kept back in their then class for another year, or, in the case of decided deficiency, discharged from the Academy.

Each class is divided into sections convenient for instruction in the different branches of study. The method of division will be best explained by taking the fourth or lowest class as an example.

The members of the fourth class are, on their admission to the Academy, arranged in alphabetical order, and are then formed into sections, averaging about 12 cadets for each branch of study. After the lapse of a month, transfers are made at the close of each week from one section to another, according to the results of the past week's attendance in study, and so continue until those most advanced are found in the first section; the next in order, in the second section; and so on.

During the first six months of residence, cadets are on probation, and only receive their *warrant* as cadets, provided they shall have passed satisfactorily at the January examinations held before the Academic Board, and that their conduct shall have been satisfactory.

Before receiving his *warrant*, each cadet is required to sign an engagement of service in the United States army for eight years, and to take an oath of allegiance to the National Government and Constitution.

The hours allotted to study are divided nearly equally between attendance on the instructors in the halls of study—or *section rooms*, as they are termed—and independent study in quarters. The attendance in the section rooms is termed *recitation*; the independent study in quarters, *study*.

The theory is, that during each recitation, every cadet of the section attending it, shall receive a thorough *viva voce* examination illustrated on the blackboard, and there is not much practical variation therefrom. Where there is any departure from it, it arises from the number of cadets in a section being too large to enable them all to be examined during the same recitation, which lasts an hour and a half, or an hour, according to the subject. Recitations in mathematics, in natural and experimental philosophy, and in civil and military engineering, occupy one hour and a half; in all the other branches of instruction, only one hour. Thus, when it appears in the time table that a class attends mathematics, for example, from 8 to 11, it is to be understood that the sections forming one half of the class attend their respective teachers in the section rooms during an hour and a half, while the other half of the class

is engaged in study in quarters. At the end of the first hour and a half those sections which have attended recitation return to their quarters to study, while their places are taken by the remaining sections which have been up to that time engaged in study in quarters.

Each teacher, as a general rule, has two sections specially assigned to him for instruction, excepting the professor or head of each department who, as has been already explained, devotes his time to general superintendence, and takes the different sections for his personal instruction at such times and in such order as he may judge best.

Before proceeding to the section rooms the different sections parade in the barrack square by sound of bugle, under the superintendence of the cadet *officer of the day*; the roll is then called by the senior cadet, who is termed the *section marcher*, who reports absentees to the officer of the day, and marches his section off to the section room by direction of the latter. Arrived in the section room, the section marcher causes the cadets to take their seats in the order of their names on the roll, and then hands them over to the instructor. When dismissed by the instructor, the section marcher forms his section as before, marches it back to the barrack square, reports all infractions of discipline which may have taken place either in study or on the march to the officer of the day, and then dismisses his section by the latter's permission.

There is no system of private tuition recognized at the Academy. Each cadet must depend on his own exertions, aided by the explanations given by the instructors in the section rooms, and by the occasional assistance he may derive from his more advanced comrades.

The allotment of so large a portion of time to independent study is a great departure from the practice of military schools in Europe; and it is a remarkable feature in the West Point system that no continued supervision is exercised over the cadets when studying in quarters beyond that which is supplied by the discipline of the cadets themselves. The senior of the two cadets inhabiting each room is responsible for discipline and orderly behavior. The officer of the day (cadet) visits each room during the hours of independent study; and the *officer in charge*, who is detailed daily from the assistant instructors of tactics, also visits the rooms at his discretion.

Routine of Daily Work.

A full-dress parade of the battalion takes place every day at sunset, after which the cadets are marched to supper, the hour of which

varies with the season of the year, but is never earlier than 5.30 p. m. Half an hour after supper the evening call to quarters is sounded for study in barracks until tattoo at 9.30. All cadets excepting officers, the non-commissioned officers of the battalion staff, and the first sergeants, must be in bed and their lights extinguished at 10 p. m., the hour for the signal of *Taps*.

The arrangement of time on Sundays is as follows :

Breakfast at 7 a. m.
Full-dress parade and inspection at 8.
Call to quarters for *study in barracks* at 9.
Church call at 10.30.
Recreation after church.
Dinner at 1 p. m.
Recreation.
Call to quarters for study, 3 to 5 p. m.
After 5 p. m. the arrangement of time is the same as on a week day.

Cadets may obtain leave from the Sunday afternoon study in barracks to attend church a second time, should they desire it.

There is no yearly vacation. When a youth enters West Point, he is fixed there, unless discharged, for four years without intermission, with the exception of two months' furlough which he may obtain at the end of his second year on certain conditions, and which is subject to a scale of diminution graduated according to misconduct.

This discipline would be intolerably severe but for the relaxation afforded by the change from barracks and the section room to camp life. The battalion is encamped from about 20th June to 30th August, and during that period the time is exclusively devoted to military exercises, practical instruction, and amusement.

Proficiency in Study—Examinations.

The system of estimating proficiency in the different subjects studied is very elaborate. Each instructor keeps daily notes of the proficiency of the cadets forming the sections of which he has the charge; the degree of excellence shown by a cadet at any recitation being recorded by marks, 3 being the maximum for each lesson, which represents *thorough* proficiency; 2.5 signifies *good*; 2 *fair*; 1.5 *tolerable*; 1 *very imperfect*; any thing below 1 is recorded as 0, or complete failure.

A weekly report showing the daily credit of each cadet and the aggregate for the week, is handed in by each instructor to the professor or head of his department at the end of the last study on Saturday, and the professor personally delivers the weekly reports of his department to the superintendent at the office of the latter between the hours of 12 and 2 p. m. on the same day. The pro-

fessor at the same time recommends such transfers of students from section to section as he may think proper. The aggregate weekly credits of each cadet in all the branches of instruction are then recorded in the superintendent's office.

From the weekly class reports, and the monthly record of discipline, a consolidated report of the progress of the Academy is made up monthly and forwarded to the inspector of the Academy, who transmits an abstract of the same to the parent or guardian of each cadet.

The weekly class reports form the most important element in determining the relative standing of the cadets in their class at the period of graduation, but a verifying test, or corrective, is supplied by the examinations which take place in January and June, the method of conducting which is as follows:

The January examinations commence on the 2d of the month. The examination of the 4th or lowest class is conducted by the whole Academic Board, the constitution of which has been already detailed. The relative standing of the members of the fourth class, up to that time arranged alphabetically, is then determined by the summing up of the weekly class reports, verified or corrected by the results of the examination. A large proportion of the cadets of the fourth class, usually from one-sixth to one-eighth of the whole, are yearly pronounced to be *deficient*, and removed from the Academy at this their first examination, which on account of its importance is required to be conducted by the whole Academic Board. The examinations of the three other classes take place before committees of the Academic Board, the whole Board being divided into two committees for this purpose.

The June, or *annual* examinations, commence on the first of the month. The first or graduating class alone is examined by the entire Academic Board, and the final relative standing of the cadets determined. The remaining classes are examined before the two committees of the Academic Board.

The June examinations take place in the presence of the *Board of Visitors*, the members of which are specially appointed in each year by the President of the United States, and whose duty it is to report to the Secretary of War, for the information of Congress, on the state of discipline, instruction, &c., &c., of the Academy.

The senior assistant professor or instructor of the branch under examination is *ex officio* a member of the Academic Board or of the committee thereof which conducts such examination; and the immediate instructor of the section to be examined is likewise associ-

ated with the Board or its committee so far as relates to the examination itself and the arrangement of the section in order of merit.

Classification according to Marks.

To assist the Academic Board in determining the accurate classification of any section about to be examined, the immediate instructor of that section hands to the Board, before the examination commences, a roll in the order of merit in which he considers the members should stand, based on the weekly credits which he had himself assigned.

At the close of the examination the same instructor hands to the Board a second roll in the order in which he conceives the members of the section should stand, judging by the result of the examination. The instructor then retires and the Board proceeds to deliberate.

Each member of the Board having kept careful notes of the examination, the relative standing of the cadets of a section in proficiency is determined by discussion.

The question next arises, who, if any, are to be pronounced *deficient*?—a dictum which inevitably entails discharge from the Academy, or putting down to a lower class.

The different sections composing the class, having been arranged in one class list in order of merit; one of the Board, usually the professor of the department concerned, supposing *e. g.* the class to consist of 50 members, may move that No. 50 be declared deficient. If the motion is negatived on discussion, the salvation of No. 50 proves also the salvation of all standing above him. But if the motion be carried, Nos. 49, 48, 47, &c., may be pronounced deficient in like manner, and so on, until a number is reached which is not condemned.

The examinations are entirely *viva voce*. Each cadet is subjected to a searching oral examination of from seven to ten minutes, illustrated on the blackboard where the subject admits of it. The daily record of the proficiency of a cadet in any subject forms, as already stated, by far the most important element in fixing his relative standing among his classmates: it is only exceptionally that the public examinations alter materially the order of merit which has been previously framed from the weekly class reports.

At the close of each examination the Academic Board reports to the Secretary of War the names of all cadets who are pronounced deficient in studies or discipline, to be discharged from the Academy unless otherwise recommended by the Academic Board.

The rule of discharge for deficiency, even in one solitary subject,

is very rigidly enforced; unless where exceptional circumstances, such as loss of time on account of illness, or having been unavoidably prevented from joining the Academy until some time after the rest of his class, induce the Board to recommend that the cadet shall have another trial by being put back to the next lower class.

Some detail is necessary to explain how the marks obtained by a cadet at the daily recitations are employed to determine the credit he is to receive in any given branch of study at the period of his graduation.

Where a subject is studied for two years, the maximum time allotted to any branch of study, the marks gained during the first year help only to fix a cadet's relative standing in his class for the year next ensuing. The credits shown by the weekly class reports of the second year alone are taken into account in determining the credit due to a cadet at the end of his residence.

The exact method of fixing the credits due for any one subject is as follows. The professor makes out a roll of the class in the order of merit finally fixed by the Academic Board at the June examinations. The first on the roll then receives credit for the maximum number of marks allotted to the subject; the last on the roll receives a credit of one-third of that maximum only. The *common difference* for all the members of the class between those limits is then calculated, and the remaining members receive credits varying from the first cadet and from each other by the amount of that common difference. The figures thus determined represent the credits assigned for any one subject at the period of graduation, and the figure of general merit for each cadet is made up of the aggregate credits obtained by him for all the branches of study, with one column included for discipline.

Proficiency in drill or riding does not affect the figure of general merit, except indirectly. Inattention or carelessness at these exercises would be noted by a certain figure of demerit, and would thereby diminish, as will be hereafter explained, the credit to be allotted for discipline at the final examination.

Graduation.

The qualifications required for obtaining an appointment to the army are simply *graduation*, or in other words that a cadet shall have passed through the four years' course at the Academy without being found *deficient* in any one branch of study or in discipline. The proportion of cadets who fail to graduate is very considerable—nearly one-half. The present first class is a fair sample. It num-

bered 74 on entrance, and its members are now only 39, and of these three had belonged to the next higher class, and were put back for deficiency. From 1842 to 1852 the exact proportion who succeeded in graduating was 0.510. From 1852 to 1862 the exact proportion was 0.523.

Although the ultimate consequences of idleness in being declared *deficient* at the half-yearly examinations are generally sufficient to insure diligence, an immediate penalty is attached to any adverse report, against a cadet for want of attention to study, or any misconduct in the recitation halls. The instructor of any section notes on his weekly class reports any cases of decided idleness and all infractions of discipline, and to each reported instance a double penalty is attached, as to every instance of misconduct at the Academy; the one immediate, in punishment according to the scale of the offense; the other prospective, consisting of a certain figure of demerit, which will rise up in judgment against the delinquent at the end of his residence, and diminish his credit for *discipline*.

The *certainty* of the penalty which attaches to idleness, both in the immediate punishment it entails, and its more serious ultimate consequences, is found to be sufficient, as a general rule, to attain the desired object; hence the character of the cadets for diligence is decidedly high.

The members of the graduating class have their choice of the services to which they shall be appointed according to their standing on the roll in order of merit. The order of precedence of corps of the United States army is: 1, Engineers; 2, Ordnance; 3, Artillery; 4, Cavalry and Infantry; and that is, as a general rule, the order of choice. The Secretary of War may sanction subsequent transfers from one branch of the service to another, but such transfers are very rare.

Beyond the privilege of choice, the only direct inducement held out to distinction among his classmates to any cadet, is one which is purely honorary. By an order from the Secretary of War so early as the year 1818, the five cadets most distinguished in studies and discipline in each class at the June examinations, are published each year in the United States Army Register (Army List). The distinction is highly prized.

The advantages resulting from a degree or peculiar distinction at West Point after appointment to the army, in respect to professional advancement or the obtaining staff employment, are very small. No special qualification is required by law or regulation for admission to the staff. When a vacancy occurs any one who desires may

make application for the vacant appointment to the Adjutant General of the army. The decision rests with the Secretary of War or the President. The head of the department in which the vacancy exists is the proper person to insist, if he thinks proper, on the possession of certain qualifications by the officer who is to be employed as his subordinate. Even graduation at West Point is not insisted on as a necessary qualification for staff employment.

Discipline.

Every young gentleman who passes his probationary examination in the January after his admission, receives his *warrant of cadet*, and signs an engagement to serve in the military force of the United States during the eight years next ensuing. He thus becomes amenable to the articles of War and to trial by court-martial.

The discipline of the Academy has no resemblance to that of an ordinary civil college, but is peculiarly and essentially military. The cadets are required to clean their own rooms, make their own beds, and clean their own arms and belts.

The staff for the maintenance of discipline is distinct from that of tuition. The professorial staff simply report infractions of discipline in study, but have no power to punish. All professors and instructors, however, as well as all military officers who may be stationed at West Point, are expected to report to the superintendent any improper conduct on the part of a cadet which may come under their observation.

The punishments to which a cadet is liable are comprised in the three classes following, viz. :—

1st. Privation of recreation, &c. ; extra duty (not guard) ; reprimands ; arrests or confinement to barrack room or tent ; confinement in light prison. *Inflicted only by the superintendent or by his authority.*

2d. Confinement in dark prison. *Only by sentence of court-martial, and seldom or never resorted to.*

3d. Suspension ; dismissal with privilege of resigning ; public dismissal. *Only by sentence of a garrison or general court-martial, which must be approved by the Secretary of War.*

"Breach of arrest" is treated as a military offense of the worst nature, and is classified with "mutinous conduct."

All offenses are classified under five heads, and are recorded according to the following scale :

An offense of the 1st class counts.....	5 demerit.
" 2d "	4 "
" 3d "	3 "
" 4th "	2 "
" 5th "	1 "

All offenses reported or to be reported against cadets, are read out at evening parade on the day after commission, excepting offenses in the section rooms reported by the instructors, which are read out on Monday evening's parade; so that every cadet may have the opportunity of presenting a written explanation, or plea, in extenuation, of the offense charged against him.

The commandant of cadets attends at his office, in the square of the cadet barracks, between the hours of breakfast and the first study every morning to receive reports of offenses.

Explanations in writing, on paper of prescribed uniform size, may be taken to the commandant by any cadet charged with an offense not later than the commandant's second orderly hour after publication, as a general rule from which any departure requires to be explained.

If the commandant considers the excuse satisfactory, he erases the offense and tears up the excuse, but forwards an abstract of all offenses which have not been explained to his satisfaction, with the written explanations, for the decision of the superintendent.

The superintendent may, on further inquiry, find the explanations of some of the offenses forwarded satisfactory, in which case he erases such offenses. To the remainder he allots such immediate punishment, and such marks of demerit in addition, as the cases respectively justify; or he may consider the demerit marks sufficient without any immediate punishment.

Thus the offenses of which a cadet may be guilty during his residence are recorded against him by a very elaborate and just method, and rise up against him at the period of his graduation. No instance of carelessness or inattention to orders is too trifling to be taken notice of.

If any cadet has more than 100 demerit recorded against him in any six successive months, he is immediately discharged from the Academy as deficient in discipline.

But during the first year's residence, offenses count one-third less than those committed during the subsequent three years; a cadet of the first year would therefore only be discharged as deficient in discipline who had obtained a demerit of 150 within any period of six successive months.

The marks of demerit of all the fourth class cadets who have not proved deficient in discipline, are wiped out entirely at the end of their first year, and do not therefore affect their relative standing at the period of graduation. The demerit of the first year is only taken into account, so as to determine, in combination with the

credits received for progress in study, the relative standing of the cadets in their class for the year next ensuing.

At the final examination, the credit to be allotted to any cadet on the score of discipline is made up by means of the demerit rolls as follows.

Each cadet receives a credit of 16·67 for every month during his residence, in which he has had no demerit recorded against him, to be deducted from his aggregate marks of demerit at the end of his residence. The monthly credit is fixed at 16·67, because that number forms the sixth part of the 100 marks of demerit, which if recorded in six months against any cadet would have occasioned his discharge.

Notwithstanding that the demerit marks of the fourth class are wiped out at the end of the first year, and do not count against the cadets at their final examination, the credit of 16·67 is still allowed to cadets for every month of their first year in which no demerit was recorded against them and deducted from their aggregate marks of demerit at the end of their residence.

The positive marks of merit for discipline due to any cadet at the end of his residence are thus determined. The cadet of the graduating class having the lowest aggregate demerit recorded against him is placed *first* in discipline, and is credited with the maximum of marks due to that subject, viz., 300. The whole class is then arranged in the same sense, the cadet having the highest demerit being placed last, and receiving only one third of the maximum, viz. 100. The common difference between these limits is then calculated for each cadet of the class, and applied as already explained.

Although the nominal value placed on discipline is represented by the same number of marks only as are allotted to each of the more important branches of study, in fixing the relative standing of cadets at their final examination; it should be remembered that no candidate can reach that period at the Academy who is not fairly well conducted. It would be quite impossible for any cadet to remain at the Academy who had earned for himself the sentence "deficient in discipline," even though the marks of demerit required for that sentence might have been earned by a succession of minor infractions of discipline. And a cadet who might be guilty of any serious willful offense would be at once removed from the Academy.

Owing to the very limited time allowed for recreation, games are almost unknown; and almost the only athletic amusement indulged

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Owing to the very limited time allowed for recreation, games are almost unknown; and almost the only athletic amusement indulged

in is boating on the river, for which, however, Saturday afternoons afford the only available time.

No difficulty is found to arise from the difference of age among the cadets in maintaining an uniform system of discipline. The same rules are applied to all during the whole period of residence.

The cadet officers and non-commissioned officers greatly assist in maintaining discipline. A daily abstract of offenses show that out of 15 offenses recorded therein, 11 were reported by cadet officers or non-commissioned officers.

The daily duties are assimilated as much as possible to those of a battalion in quarters, and are as follows:

The officer in charge, detailed daily from the assistant instructors of tactics, is responsible for the proper performance of all the military duties of the battalion during the day. His tour of duty commences at guard mounting (7.30 a. m. in barracks, 8 a. m. in camp), at which time he reports for orders to the commandant at the office of the latter. He has an office adjoining that of the commandant where he must constantly be present from *reveillé* to *taps* (the signal for putting out lights at 10 p. m.), except when absent on duty or at meals. He is present in the cadets' mess hall during all meals, and superintends every parade and roll call. He visits the sentries at his discretion. On being relieved, he includes in the usual morning report of his company, all offenses which may have come to his knowledge as having occurred during his tour of duty.

The officer of the day, is detailed usually from the roster of the cadet officers, although every cadet of the highest class is appointed at least once to perform this duty. He is present at guard mounting and receives his guard in the usual military manner, after which he reports for order to the commandant and is generally under the orders of *the officer in charge*. His post of duty is the guard room, which is in the same building as, and immediately beneath, the offices of the commandant and the officer in charge. He causes all calls to be sounded at the proper time; is present at all parades and roll calls; and receives reports of all absentees, whom it is his duty immediately thereafter to seek and to order when found to repair to their respective duties unless properly excused. He reports to the officer in charge all absentees whom he may not be able to find, and all cadets who fail to obey his orders. He directs the formation of all the class sections before marching to the section rooms; receives reports of absentees from the section marchers, and requires the latter to march off their sections in a proper military manner. He is responsible for the suppression of

all irregularities in quarters or their vicinity during his tour. He visits the quarters during the hours of independent study and receives reports of absentees. He visits all the quarters at *Taps*, and reports absentees to the officers in charge. He afterwards visits the room of every cadet absent every 15 minutes until the return of the absentee, or until otherwise directed by the officer in charge. On the back of the guard report which he forwards next morning to the commandant, he records all offenses which come to his knowledge as having occurred during his tour; and presents with it all permits and passes that have come into his hands, all of which are required to be deposited with him. The officer of the day is relieved from study during his tour of duty.

Daily Guard.—A cadet guard, consisting of one sergeant, four corporals, and 24 privates, is mounted every morning at 7.30. The cadets of the guard remain in the guard-room during the day, excepting the hours of study.

Sentries are posted during the hours of recreation, the most important posts being the different entrance halls of the cadet barracks. Ten minutes after the *call to quarters*, during the day on Sundays, and every evening, it is the duty of each such sentry to visit all the rooms belonging to his particular entrance hall. He then orders all cadets whom he may find visiting in rooms not their own to their proper quarters, and reports all who fail to comply promptly with his orders to the sergeant of the guard, as well as all absentees; and the sergeant of the guard passes on all such reports to the officer of the day. A sentry similarly reports every irregularity that may occur on his beat, and particularly the name of any cadet who may have absented himself from the barracks for more than ten minutes. A high sense of the honorable confidence reposed in a sentry seems to be generally entertained; and there is every reason to believe that the cadet sentries at West Point perform their duties in a trustworthy and satisfactory manner.

The general duties of the battalion are assimilated as much as possible to those of a battalion in quarters. The daily detail of duties is drawn up by the cadet adjutant. The cadets for guard are detailed by the first sergeants of their respective companies at each evening parade, and the daily routine is in this respect as nearly as possible the same as that of military life.

There is no yearly vacation; and the furlough which each cadet may obtain at the end of his second year is subject to the following conditions, viz. :—

1st. If he has obtained 350 demerit in the two preceding years, he is detained twelve days; if 325, 300, 275, 250, or 200 demerit within the same period, he is detained ten days, eight days, five days, three days, or two days respectively.

2d. He is required to sign a certificate, declaring that he has in *no manner improperly interfered with, or molested or injured new cadets*. The furlough of any cadet declining to sign this certificate is limited to one month, from 28th July to 28th August. Although there have been instances of cadets declining to sign this certificate, it is probable that, as a general rule, the cadet conscience places a liberal interpretation on the words of the formula.

Leave of absence from the Academy for one to two days is occasionally granted, but only for exceptional reasons.

Buildings.

The *cadet barrack* is a handsome stone building of four stories. It contains 176 rooms, of which 136 are cadets' quarters, 14 feet by 22 feet, arranged in eight divisions, each division having its own entrance, and having no interior communication with the other divisions. Not more than two cadets are lodged in the same room. The two beds in each room are curtained off from the room, and separated from each other by a partition. There are numerous bathing rooms in the basement, to which the cadets have access.

Each division of quarters is under the superintendence of an assistant instructor of tactics, who visits the rooms of his division three times in the course of each day, and occasionally during the night. He makes a daily report in writing to the commandant of the condition of the rooms under his charge, noting all delinquencies that may have come to his knowledge since his last report.

A division of quarters is divided into two *subdivisions of quarters* of two floors each, each subdivision being under the charge of one of the cadet officers, who has his quarters therein, and who is responsible for the discipline of his subdivision, and for the proper fulfillment of all orders that may be issued relative to the police of quarters. He visits all the rooms of his subdivision 30 minutes after reveillé, and immediately after *taps* (lights out), notes all irregularities, and makes a daily report in writing to the superintendent of his division, recording all delinquencies, and certifying that since the report of the previous day he has faithfully performed all duties required of him as *inspector of subdivision*.

The *Academy* is a building detached, containing the following rooms and departments, viz.:—

Chemical department, comprising laboratory, lecture-room, room for electrical experiments, and a work-room; *fencing department*; *gymnasium*; *mineralogical collection*; *engineering department*, comprising drawing and model rooms; *artillery model room*; *mathematical model room*; *drawing academy*; *trophy room*; *picture and statue galleries*; *mineralogical section rooms*; and 10 *recitation rooms* (or halls of study).

Another detached building contains the *observatory*; and *library* of 20,000 volumes, to which the cadets have access at stated times.

There are no rooms specially set apart for day rooms, reading or recreation rooms.

The *mess hall* is a detached building. The central hall where the cadets take all their meals is 96 feet by 46 feet and 20 feet high. Quarters for the purveyor with kitchen and bakery, and with quarters for the necessary servants in the basement, are attached.

The cadets are formed in the barrack square previous to each meal, and are marched to and from the mess hall. The officer in charge visits the mess hall at all meal times. The senior cadet officer present is responsible for good order.

The *Riding School* is detached and is admirably adapted to its purpose.

Expenses.

The Academy is entirely supported by the State. The average annual cost for 62 years has been \$137,315; and this sum includes the cost of all buildings and structures, of repairs and maintenance. The yearly appropriations during the last eight years have varied from \$170,000 to \$200,000, but does not include certain sums which are paid out of the regular appropriation to the War Department.

A new cadet is admitted to the Academy on the 1st of July. From that date he is credited with Government pay at the rate of \$30 a month, which allowance is calculated as sufficient to pay for the whole cost of his equipment and maintenance. As the monthly pay is, however, small compared with the first cost of uniforms and outfit, a new cadet usually deposits with the treasurer of the Academy on entrance from \$60 to \$80, to be credited to his account. Thenceforth all wants and necessities are supplied to the cadet by the Government, the prices being a trifle above cost and charged against his account. At the end of his residence, a balance is struck, and the sum standing to his credit, if any, is paid over to him. It is possible by this arrangement for a very careful and steady lad to secure his education, his maintenance during four years, a position in the army, and \$100 in addition, at the time of his graduation.

STAFF FOR GOVERNMENT AND INSTRUCTION, JAN. 1, 1872

SUPERINTENDENT.—Col. THOMAS H. RUGER, 18th Infantry.

Military Staff.

Adjutant.—Captain Robert H. Hall, 10th Infantry.
Quartermaster.—Captain Tully McCrea, 1st Artillery.
Treasurer.—1st Lieut. James M. Marshall, 4th Artillery.
Surgeon, U. S. A.—Thomas A. McParlin, M. D.
Assistant Surgeon, U. S. A.—Van Buren Hubbard, M. D.

Academic Staff.

Commandant of Cadets and Instructor of Artillery, Cavalry and Infantry Tactics.—Lieut. Col. EMORY UPTON, 1st Artillery.
Assistant Instructor of Artillery Tactics.—Captain Alexander Piper, 3d Artillery.
Assistant Instructor of Infantry Tactics.—Captain Joseph S. Conrad, 2d Infantry.
Assistant Instructor of Artillery and Infantry Tactics.—Capt. John Egan, 4th Artillery.
Assistant Instructor of Cavalry Tactics.—Captain Alfred E. Bates, 2d Cavalry.
Assistant Instructor of Artillery, Infantry and Cavalry Tactics.—1st Lieut. William S. Starring, 2d Artillery.
Assistant Instructor of Infantry Tactics.—1st Lieut. John F. Stretch, 10th Infantry.
Professor of Mathematics.—ALBERT E. CHURCH, LL.D.
Assistant Professor of Mathematics.—1st Lieut. John P. Story, 4th Artillery.
Acting Assistant Professors of Mathematics.—1st Lieut. William F. Reynolds, jr., 1st Artillery; 2d Lieut. John E. Greer, Ordnance; 2d Lieut. Albert H. Payson, Engineers; 2d Lieut. Frank Heath, 3d Artillery; 2d Lieut. Philip M. Price, jr., 2d Artillery.
Professor of Drawing.—ROBERT W. WKIR, N. A.
Assistant Professor of Drawing.—1st Lieut. Edward H. Totten, 1st Artillery.
Acting Assistant Professor of Drawing.—2d Lieut. Charles W. Whipple, 3d Artillery.
Professor of Chemistry, Mineralogy, and Geology.—HENRY L. KENDRICK, LL.D.
Assistant Professor of Chemistry, Mineralogy, and Geology.—2d Lieut. John Pitman, jr., Ordnance.
Acting Assistant Prof. of Chemistry, Mineralogy, and Geology.—2d Lieut. Samuel E. Tillman, 4th Artillery.
Professor of the Spanish Language.—PATRICE DE JANON.
Assistant Professor of the Spanish Language.—1st Lieut. James O'Hara, 3d Artillery.
Professor of Natural and Experimental Philosophy.—PETER S. MICHIE.
Assistant Prof. of Natural and Experimental Philosophy.—1st Lieut. James Mercier, Engineers.
Acting Assistant Professors of Natural and Experimental Philosophy.—2d Lieut. Edward S. Holden, 4th Artillery; Additional 2d Lieut. Edgar W. Boss, Engineers.
Professor of the French Language.—GEORGE L. ANDREWS.
Assistant Professor of the French Language.—1st Lieut. Geo. G. Greenough, 4th Artillery.
Acting Assistant Professor of the French Language.—2d Lieut. Thomas H. Barber, 1st Artillery.
Professor of Ethics and Law.—JOHN FORSTH, D.D.
Assistant Professor of Ethics and Law.—Captain John S. Poland, 6th Infantry.
Professor of Military and Civil Engineering.—JUNIUS B. WHEELER.
Assistant Professor of Military and Civil Engineering.—Captain Jarrett J. Lydecker, Engineer.
Acting Assistant Professors of Military and Civil Engineering.—Captain Oswald H. Ernst, Engineers; 1st Lieut. John C. Mallory, Engineers.
Instructor of Ordnance and Gunnery.—Captain THOMAS C. BRADFORD, Ordnance.
Assistant Instructor of Ordnance and Gunnery.—1st Lieut. James W. Reilly, Ordnance.
Instructor of Practical Military Engineering, Military Signaling and Telegraphy, Commanding Company E, Engineers.—Captain OSWALD H. ERNST, Engineers.
Assistant Instructor of Military Signaling and Telegraphy, and Acting Signal Officer.—1st Lieut. Edward H. Totten, 1st Artillery.
Assistant Instructor of Practical Military Engineering, on duty with Company E, Engineers.—2d Lieut. Frederick A. Mahan, Engineers.
Sword Master.—Antoné Lorents.

COURSE OF INSTRUCTION.

The studies pursued, and the instruction given at the Military Academy, are comprised under the following heads, in the Official Regulations:—

I. INFANTRY, ARTILLERY, AND CAVALRY TACTICS, AND MILITARY POLICE AND DISCIPLINE.—This course will conform to the system of Infantry Tactics and Military Police and Discipline, established for the government of the Army, and will comprise the schools of the soldier, company, and battalion, the evolutions of the line, the manual exercise and manœuvres of Light Infantry and riflemen, with the police and discipline of camp and garrison. (2.) Artillery Tactics will comprise exercise of field, siege, and garrison artillery; manœuvres of batteries; mechanical manœuvres and target practice. (3.) Cavalry tactics will comprise the schools of the trooper mounted, of the platoon, and of the squadron; and equitation.

II. THE USE OF THE SWORD, &c.—Will comprise the use of the small-sword, broadsword, and bayonet, and such military gymnastics as circumstances may permit.

III. MATHEMATICS.—This course will comprise:

(1.) *Algebra.*—Fundamental operations; involution and evolution; reduction and conversion of fractional and radical qualities; reduction and solution of equations, including those of the third degree ratios and proportions; summation of infinite series and figurate numbers; nature, construction, and use of logarithms.

(2.) *Geometry.*—Geometry of right lines, planes, and volumes and spherical geometry; and the formation and construction of determinate geometrical equations.

(3.) *Trigonometry.*—The solution of all the cases in plane and spherical trigonometry; analytical investigation of trigonometrical formulæ; and the construction of trigonometrical tables.

(4.) *Mensuration and Surveying.*—Mensuration of planes; surfaces and volumes; principles and practice of common land surveying; different methods of plotting and calculating such surveys; trigonometrical surveying; measurement of heights and distances: leveling; and use of instruments in plotting, surveying, &c.

(5.) *Descriptive Geometry.*—The graphic illustration and solution of geometrical problems in space; and the particular application of this method to spherical projections, construction of maps, to shades and shadows, and perspective, and isometric projections.

(6.) *Analytical Geometry.*—Construction of algebraic expressions; solution of determinate problems; determination and discussion of the equations of the right line, plane and conic sections; discussion of the general equations of the second degree involving two or three variables; determination of loci, &c.

Differential and Integral Calculus, with its application to maxima and minima, the drawing of tangents, rectification of curves, radii of curvatures, quadratures, cubatures, &c.

IV. FRENCH LANGUAGE.—This course will comprise:

French Grammar; reading and writing French; and translating (from text and orally) English into French and French into English.

V. SPANISH LANGUAGE.—This course will comprise:

Spanish Grammar; reading and writing Spanish; and translating (from text and orally) English into Spanish and Spanish into English.

VI. DRAWING.—This course will comprise:

Topography, with lead-pencil, pen and ink, and colors.

Figures, with pen and ink.

Landscape, with the lead-pencil.

Landscape, with colors.

VII. CHEMISTRY, MINERALOGY, AND GEOLOGY.—This course will comprise:

Chemical Physics.—Magnetism; static and voltaic electricity; electro-mag-

netism; magneto-electricity; thermo-electricity; animal electricity; construction and use of apparatus illustrating the principles of the foregoing subjects and their mutual relations. Heat—its nature, sources, and effects; relation between thermal energy and other forces; measurement and equilibrium of temperatures; thermal and aqueous phenomena of the atmosphere; light as a chemical agent.

Chemistry.—Its general laws and language; inorganic and organic chemistry theory of radicals, types, and substitutions; animal chemistry; animal nutrition, heat, and force; relation between the mineral, vegetable, and animal kingdoms; applications of chemistry to agriculture, fermentation, &c.

Mineralogy.—Crystallography; structure, practical determination and uses of minerals; descriptive mineralogy.

Geology.—The earth's features; classification, structure, modes of occurrence and distribution of rocks; rock veins; division of geological history into ages; the various agents of geological changes; geology of the United States.

VII. NATURAL AND EXPERIMENTAL PHILOSOPHY.—This course will comprise:

Mechanics.—1st. General classification of the physical sciences; general constitution and physical properties of bodies; measurements of the masses; densities and weights of bodies; definitions and descriptions of natural forces.

2d. *Mechanics of Solids.*—Work; laws of equilibrium and of motion; free and constrained motion of solids; motion of projectiles; planetary motions and the general principles of physical astronomy. 3d. *Mechanics of Fluids.*—Mechanical properties of fluids; equilibrium and motion of fluids; general principles of buoyancy; equilibrium and stability of floating bodies; specific gravity; and barometrical measurements. 4th. *Mechanics of Molecules.*—General principles of sound, heat, light, and electricity, to be taught principally by lecture. 5th. *Application.*—Objects and principles of machines; friction; stiffness of cordage and adhesion; discussion of the elementary machines—cord, lever, inclined plane, wheel and axle, pulleys, screw, hydraulic press, and hydraulic ram.

Acoustics.—Theory of the internal structure of bodies; nature of sound; waves in general; velocity of sound in solids, liquids, and gasses, and measurement of distances by sound; qualities of sound; reflection, refraction, divergence and decay of sound; echoes, hearing and speaking trumpets, and description of the ear.

Optics.—Nature of light; laws of its deviation; laws of vision; optical instruments; chromatics; achromatism; polarization, interference, and chromatics of polarized light.

Astronomy.—Description of the solar and stellar systems; celestial and terrestrial spheres; figure and magnitude of the earth; its motions, and the appearances and vicissitudes arising therefrom; theory of astronomical reductions; eclipses, occultations, and transits; tides and twilight; use of astronomical instruments and tables; methods of making, clearing, and calculating observations for time, latitude, longitude, the earth's magnetism and true meridian.

IX. ORDNANCE AND GUNNERY.—This course will comprise:

Ordnance.—1st. The theory and preparation of gunpowder, cannon, artillery carriages, projectiles, implements, machines, small-arms, ammunition, and military fireworks. 2d. Practical instruction in making musket, rifle, pistol, cannon and howitzer cartridges; preparation of strap, grape, and canister shot, fuzes, slow and quick match, port-fire, signal rockets, carcasses, fire-balls, light balls, and incendiary composition; loading shells, shrapnel shot and grenades; putting up stores for transportation; loading caissons; in determining the pressure on the bore of a gun; in determining the initial velocity of projectiles; in the manner of proving powder, and when circumstances will admit of it, the operation of casting cannon solid and hollow, casting of projectiles and the usual methods of testing gun-metals, will be witnessed.

Gunnery.—Embracing the study of the movements of projectiles; the theory of pointing fire-arms; the different kinds of fires and their effect; the art of breaching, and the composition of batteries.

X. ETHICS AND LAW.—This course will comprise:

Ethics.—1st. Common basis with law. 2d. In moral science, the pursuit of

the highest good for each and all; the realization of excellence by virtue, the fulfillment of obligations to God and our country, to ourselves and others; and 3d. In its practical division, the duties, vices and passions.

Law.—1st. General principles. 2d. International law. 3d. Political organization and constitution of the United States. 4th. Rules and articles of war: and the organizations, powers, forms, and proceedings of courts-martial.

VI. PRACTICAL MILITARY ENGINEERING.—This course will comprise:

The preparation of trench and battery materials—gabions, fascines, sand-bags, &c.; the manner of tracing and profiling batteries and intrenchments, by cords, pickets and laths; the defiladement of intrenchments and other works; the distribution and posting of working parties, with their implements and materials in the construction of batteries, intrenchments, &c.; the construction of the various revetments for batteries and intrenchments, the laying of platforms for field, siege, and garrison artillery; the construction of palisades, fraises, abatis, rifle-pits, and trous-de-loup; the manner of placing intrenchments and other works, together with houses, walls, fences, &c., in a state of defense; the trace, defiladement, and construction of the several kinds of trenches and saps; descent and passage of a ditch, and other operations of a siege; the manner of laying out, constructing, tamping and springing mines, both for attack and defense, with the application of electricity thereto; trestle, ponton, and other bridge exercises; military reconnaissance of a route for the march of a column of troops, and of a locality for defensive works.

XII. MILITARY AND CIVIL ENGINEERING, AND THE SCIENCE OF WAR.

Military Engineering.—1st. Principles and methods of planning and constructing temporary works, comprising intrenchments, inclosed works, batteries, lines, bridge-heads, with the modes of their attack and defense. 2d. Permanent Fortifications.—Principles of planning and constructing permanent works for land and sea-coast defense, with an analysis and description of the modern systems of fortifications; the attack and defense of permanent works, including mines.

Civil Engineering.—Comprising building materials, masonry, carpentry, bridges, roads, railroads, canals, and river and harbor constructions. The theory and description of mechanism and machines. The principles of architecture.

Descriptive drawing as applied to civil engineering, architecture and fortification.

Science of War.—The military organization of states and kingdoms; composition and organization of an army; strategy illustrated and explained by military history; the operations of a campaign, comprising the movements of troops and their general dispositions for attack and defense.

DISTRIBUTION OF STUDIES BY YEARS AND CLASSES.

Subjects.—First Year—Fourth Class.

MATHEMATICS.—Davies' Bourdon's Algebra. Davies' Legendre's Geometry and Trigonometry. Church's Descriptive Geometry.

FRENCH LANGUAGE.—Bolmar's Levizac's Grammar and Verb Book. Agnel's Tabular System. Berard's Leçons Françaises. * Spier's and Surrenne's Dictionary.

ARTILLERY AND INFANTRY TACTICS.—Practical Instruction in the Schools of the Soldier, Company, and Battalion. Practical Instruction in Artillery.

SMALL-ARMS.—Instruction in Fencing and Bayonet Exercise.

Second Year—Third Class.

MATHEMATICS.—Church's Descriptive Geometry, with its application to Spherical Projections. Church's Shades, Shadows, and Perspective. Davies' Surveying. Church's Analytical Geometry. Church's Calculus.

FRENCH LANGUAGE.—Bolmar's Levizac's Grammar and Verb Book. Berard's Leçons Françaises. Chapsal's Leçons et Modèles de Littérature Française. Agnel's Tabular System. Rowan's Morceaux Choisis des Auteurs Modernes.

* Spier's and Surrenne's Dictionary.

SPANISH LANGUAGE.—Josse's Grammar. Morale's Progressive Reader. Ollendorf's Oral Method applied to the Spanish, by Valazquez and Simonne. * Seoane's Neuman and Barretti's Dictionary.

DRAWING.—Topography, &c. Art of Penmanship.

INFANTRY, ARTILLERY, AND CAVALRY TACTICS.—Practical Instruction in the Schools of the Soldier, Company, and Battalion. Practical Instruction in Artillery and Cavalry.

Third Year—Second Class.

NATURAL AND EXPERIMENTAL PHILOSOPHY.—Bartlett's Mechanics. Bartlett's Acoustics and Optics. Bartlett's Astronomy.

CHEMISTRY.—Fowne's Chemistry. Chemical Physics, from Miller.

DRAWING.—Landscape. Pencil and Colors.

ARTILLERY, CAVALRY, AND INFANTRY TACTICS.—United States Tactics for Garrison, Siege, and Field Artillery. Upton's Infantry Tactics. Practical Instruction in the Schools of the Soldier, Company, and Battalion. Practical Instruction in Artillery and Cavalry.

PRACTICAL MILITARY ENGINEERING.—Myer's Manual of Signals. Practical and Theoretical Instruction in Military Signaling and Telegraphy.

Fourth Year—First Class.

MILITARY AND CIVIL ENGINEERING, AND SCIENCE OF WAR.—Mahan's Field Fortifications. Mahan's Outlines of Permanent Fortification. Mahan's Civil Engineering. Mahan's Fortifications and Stereotomy. Mahan's Advanced Guard and Outpost, &c. Mahan's Industrial Drawing. * Moseley's Mechanics of Engineering.

MINERALOGY AND GEOLOGY.—Dana's Mineralogy. Hitchcock's Geology.

ETHICS AND LAW.—French's Practical Ethics. Halleck's International Law. Kent's Commentaries (portion on Constitutional Law). French's Law and Military Law. Benét's Military Law and the Practice of Courts Martial. * Webster's Dictionary.

ARTILLERY, CAVALRY, AND INFANTRY TACTICS.—United States Tactics for Cavalry. Practical Instruction in the Schools of the Soldier, Company, and Battalion. Practical Instruction in Artillery and Cavalry.

ORDNANCE AND GUNNERY.—Benton's Ordnance and Gunnery. Practical Pyrotechny.

PRACTICAL MILITARY ENGINEERING.—Practical Instruction in fabricating Fagots, Sap Fagots, Gabions, Hurdles, Sap Rollers, &c.; manner of laying out and constructing Gun and Mortar Batteries, Field Fortifications, and Works of Siege; formation of Stockades, Abatis, and other military obstacles; and throwing and dismantling Pontoon Bridges.

Myer's Manual of Signals. Practical Instruction in Military Signaling and Telegraphy.

PROGRAMME OF CAMP DUTIES FROM JULY 5, TO AUGUST 30.

Reveille, 5 a. m. Policing camp just after reveillé. Infantry company drills, for all classes, 5.30 a. m. Surgeon's call, 6.30 a. m. Breakfast call, 7 a. m. Parade call, 8 a. m. Guard mounting, immediately after parade. Siege and sea-coast artillery drill for 1st class; Light Battery drill, 2d class; Foot Light Battery drill, 4th class; 9 till 10 a. m. Laboratory duty for two weeks, signaling, practical and topographical engineering, for rest of term for 1st class, 10 till 12 a. m. Laboratory duty for 3d class for two weeks, 10 till 12 a. m. Infantry squad drill for 4th class, 10 till 11 a. m. Dinner, 1 p. m. Policing camp, 4 p. m. Infantry company's drill for all classes, 5.30 p. m. Parade, sunset. Supper, after parade. Tattoo, 9.30 p. m. Taps, 9.45 p. m.

* Books marked * are for reference.

I. REGULATIONS

RELATIVE TO

THE ADMISSION OF CADETS INTO THE MILITARY ACADEMY.

APPLICATIONS for admission into the United States Military Academy at West Point, should be made by letter to the Secretary of War. By provision of law, each Congressional and Territorial district, and the District of Columbia, is entitled to have one cadet at the Military Academy, and no more. The district appointments are made on the nomination of the member of Congress representing the district at the date of the appointment. The law requires that the individual selected shall be an actual resident of the Congressional district of the State or Territory, or District of Columbia, from which the appointment purports to be made. Also, appointments "at large," not to exceed ten, are annually made. Application can be made, at any time, by the candidate himself, his parent, guardian, or any of his friends, and the name placed on the register. No preference will be given to applications on account of priority; nor will any application be entered in the register when the candidate is under or above the prescribed age; *the precise age must be given; no relaxation of the regulation in this respect will be made*; nor will any application be considered in cases where the age and other qualifications of the candidates are not stated. The fixed abode of the candidate, and *number* of the Congressional district which he considers his permanent residence, must be set forth in the application. The pay of a cadet is \$30 per month, to commence from his admission into the Military Academy, and is considered ample, with proper economy, for his support.

The appointments will be made annually in the month of February or March, on the applications made within the preceding year. The claims of all the candidates on the register will be considered, and acted upon. No certain information can be given as to the probable success of the candidate, before the arrival of the period for making the selections. Persons, therefore, making applications, must not expect to receive information on this point.

As a general rule, no person will be appointed who has had a brother educated at the institution.

QUALIFICATIONS.

Candidates must be over sixteen and under twenty-one years of age, at the time of entrance into the Military Academy; must be at least five feet in height, and free from any deformity, disease, or infirmity, which would render them unfit for the military service, and from any disorder of an infectious or immoral character. They must be able to read and write well, and perform with facility and accuracy the various operations of the four ground rules of arithmetic, of reduction, of simple and compound proportion, and of vulgar and decimal fractions.

It must be understood that a full compliance with the above conditions will be insisted on—that is to say—the candidate must write in a fair and legible hand, and without any material mistakes in spelling, such sentences as shall be dictated by the examiners; and he must answer promptly, and without errors,

all their questions in the above-mentioned rules of arithmetic: failing, in any of these particulars, he will be rejected.

It must also be understood, that every candidate will, soon after his arrival at West Point, be subjected to a rigid examination by an experienced medical board; and should there be found to exist in him any of the following causes of disqualification, to such a degree as will immediately, or in all probability may at no very distant period, impair his efficiency, he will be rejected:

1. Feeble constitution and muscular tenuity; unsound health from whatever cause; indications of former disease; glandular swellings, or other symptoms of scrofula.

2. Chronic cutaneous affections, especially of the scalp, or any disorder of an infectious character.

3. Severe injuries of the bones of the head; convulsions.

4. Impaired vision from whatever cause; inflammatory affections of the eyes; immobility or irregularity of the iris; fistula lachrymalis, &c., &c.

5. Deafness; copious discharge from the ears.

6. Loss of many teeth, or teeth generally unsound.

7. Impediment of speech.

8. Want of due capacity of the chest, and any other indication of a liability to a pulmonic disease.

9. Impaired or inadequate efficiency of one or both of the superior extremities on account of fractures, especially of the clavicle, contraction of a joint, extenuation, deformity, &c., &c.

10. An unnatural excurvature or incurvature of the spine.

11. Hernia.

12. A varicose state of the veins, of the scrotum and spermatic cord, (when large,) sarcocele, hydrocele, hemorrhoids, fistulas.

13. Impaired or inadequate efficiency of one or both of the inferior extremities on account of varicose veins, fractures, malformation, (flat feet, &c.,) lameness, contraction, unequal length, bunions, over-lying or supernumerary toes, &c., &c.

14. Ulcers, or unsound cicatrices of ulcers likely to break out afresh.

The above Regulations were issued by the War Department in 1862. Although it appears from this official document, that "applications for admission into the United States Military Academy at West Point, should be made by letter to the Secretary of War," and that "the claims of all candidates on the register will be considered and acted upon," it is also stated, that "*the district appointments are made on the nomination of the member of Congress representing the district at the date of the appointment.*" This delicate duty, and great privilege of selecting, out of all the young men between the ages of sixteen and twenty-one years, in a Congressional district of at least 70,000 inhabitants, who aspire to serve their country in a military capacity, the one *best* qualified, or even *well* qualified, is not imposed or conferred directly by law, but by the practice of the appointing power, on the member for that district.

Summary of Qualifications (in Circular of 1871).

A sound body and constitution, a fixed degree of preparation, good natural capacity, an aptitude for study, industrious habits, perseverance, an obedient and orderly disposition, and a correct moral deportment are such essential qualifications that candidates knowingly deficient in any of these respects should not, as many do, subject themselves and their friends to the chances of future mortification and disappointment, by accepting appointments to the Academy and entering upon a career which they can not successfully pursue.

Method of Testing the Qualifications of Candidates.

Candidates should be able to read with facility from any book, giving the proper intonation and pauses, and to write portions that are read aloud for that purpose, spelling the words and punctuating the sentences properly. Some historical work should preferably be chosen, and successive passages read till the reading exercises are ended. Then, from another part of the book, a suitable paragraph or paragraphs, of reasonable length, should be read aloud to the candidates, with proper intonations and pauses, as a guide to punctuation, and written down by them as read.

In Arithmetic they should be able to perform with facility examples under the four ground rules, and hence should be familiar with the tables of addition, subtraction, multiplication, and division, and be able to perform examples in reduction and in vulgar and decimal fractions, such as:

Add $\frac{2}{3}$ to $\frac{3}{4}$; subtract $\frac{2}{3}$ from $\frac{5}{6}$; multiply $\frac{3}{4}$ by $\frac{7}{8}$; divide $\frac{2}{3}$ by $\frac{3}{4}$

Add together two hundred and thirty-four thousandths, (.234,) twenty-six thousandths, (.026,) and three thousandths, (.003.)

Subtract one hundred and sixty-one ten thousandths (.0161) from twenty-five hundredths (.25.)

Multiply or divide twenty-six hundredths (.26) by sixteen thousandths (.016.)

They should also be able to change vulgar fractions into decimal fractions, and decimals into vulgar fractions, with examples like the following:

Change $\frac{1}{2}$ into a decimal fraction of the same value.

Change one hundred and two thousandths (.102) into a vulgar fraction.

In simple and compound proportion, examples of various kinds should be given, and the candidates should understand the principles of the rules followed.

In English Grammar candidates should exhibit a familiarity with the nine parts of speech and the rules in relation thereto; should be able to parse any ordinary sentence given to them, and, generally, should understand those portions of the subject usually taught in the higher academies and schools throughout the country, under Orthography, Etymology, Syntax, and Prosody.

In Descriptive Geography they should name, locate, and describe the natural grand and political divisions of the earth, and be able to delineate any one of the States or Territories of the American Union, with its principal cities, rivers, lakes, seaports, and mountains.

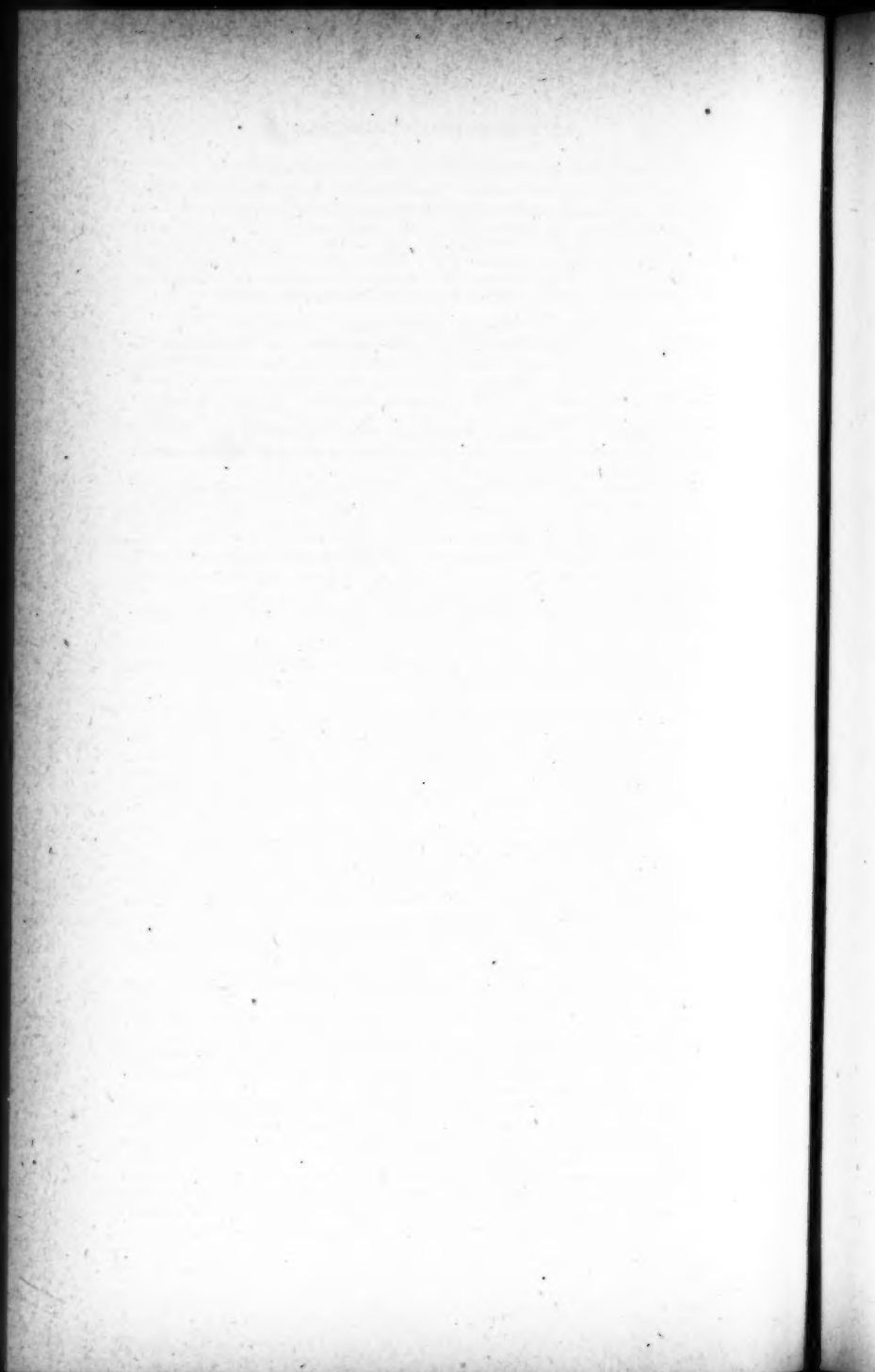
In History they should be able to name the periods of the discovery and settlement of the North American continent; of the rise and progress of the United States, and of the successive wars and political administrations.

The examinations in Orthography, Grammar, Geography, and History may be either oral or written.

Candidates undoubtedly deficient in any one requisite, or more than one, should resign any expectation of admission till the deficiency is overcome.

Candidates should first be examined by a medical practitioner, with reference to the physical requirements and disqualifications set forth in the circular; such as are manifestly disqualified being so informed.

The condition of body and mind considered together should be regarded, as well as general proficiency in the studies as a whole. Especially should natural ability and manifest aptitude for acquiring and applying knowledge take precedence of mere scholastic finish and readiness of answer to former problems. Other things being equal, preference should be given, in order, to those whose claims are strengthened by military, naval, or other distinguished service rendered to the country by themselves or their immediate relatives; and it is better for candidates to be nearer the minimum than the maximum age.



BOARD OF VISITORS

In the Regulations for the government of the Military Academy, approved July 1, 1816, provision for the appointment of a Board of Visitors, to consist of five competent gentlemen, who should attend at each general examination, and report thereon to the War Department through the Inspector, who appears to have been from the start the senior officer of the corps of Engineers.

In 1846 (Aug. 8), Congress authorized the appointment annually, by the President, of a Board of Visitors, whose duty it was made to attend each yearly examination, and report to the Secretary of War upon the discipline, instruction, police and fiscal affairs of the Academy. The members were to be taken from one half of the number of States, alternating yearly with the other half, each member being a *bona fide* resident of the State from whence appointed, and each Congressional district being in turn designated to furnish an appointee. Of the members each year, not less than six must be taken from among officers actually serving in the militia.

Extract from Act of Congress approved August 8, 1846, amended by Acts of March 16, 1868, and February 21, 1870.

That the President is authorized to appoint a Board of Visitors to attend the annual examination of the Military Academy, whose duty it shall be to report to the Secretary of War, for the information of Congress, at the commencement of the next succeeding session, the actual state of the discipline, instruction, police, administration, fiscal affairs, and other concerns of the institution: *Provided*, That the whole number of visitors each year shall not exceed seven: *Provided, further*, That no compensation shall be made to said members beyond the payment of their expenses for board and lodging while at the Military Academy, and an allowance, not to exceed eight cents per mile, for traveling by the shortest mail route from their respective homes to the Academy, and back to their homes. And in addition to the other members of the Board of Visitors to be appointed by the President, according to law, to attend the annual examination of cadets at the United States Military Academy, there shall be on every such board two Senators, to be designated by the Vice-President, or President *pro tempore* of the Senate; and three members of the House of Representatives, to be designated by the Speaker of the House of Representatives, such designations respectively to be made at the session of Congress next preceding the time of such examination; and the Senators and members so appointed shall make full report of their action as such visitors, with their views and recommendations in regard to the said Military Academy, within twenty days after the meeting of Congress, at the session next succeeding the time of their appointment.

MILITARY ACADEMY AT WEST POINT.

EXTRACT FROM REPORT OF VISITORS FOR 1871.

Twenty-five years ago West Point was substantially separate from the outside world; for several months of the year a mail was not received oftener than once in three or four days. The presence of visitors was almost wholly unknown, and the officers and cadets formed a community by and of themselves. The relations existing between the officers and cadets was like that at present existing between the officers and soldiers at a military post. Cadets were permitted to visit at the quarters of professors and officers on Saturday afternoons, and at no other time. But so reserved were the manners of officers, even on such occasions, that the privilege, though recognized, was very rarely exercised. There was substantially no social intercourse between the officers and the cadets.

In those days, too, the rigor of discipline put all cadets, the sons of the rich and the sons of the poor, upon a common footing. The regulations not only prohibited any cadet from receiving money from his parents and friends, but no place existed, or was permitted to exist, on the limits, where cadets could expend money. Occasionally a cadet was allowed to purchase what he pleased under the head of "sundries;" not exceeding one dollar in amount, and that only on the order of an officer in charge.

But all this has changed. West Point is now or fast becoming a place of fashionable resort. Hotels have been erected in near proximity to the post, and hundreds of visitors now repair thither where one did in former years. This influx of fashionable life has caused a relaxation of the rules in regard to cadets visiting. The great distance between officers and cadets has been gradually diminished. Cadets of the first class may now visit officers every day in the week, and officers and cadets associate together with a freedom of intercourse not formerly known. Insensibly the standard of discipline has been lowered, until the Academy has less than formerly the character of the Regular Army, and more the features of a militia establishment, where officers and men are separated while on duty, but mingle in social intercourse when the hour of drill or parade has passed.

Although the regulation in regard to cadets receiving money remains unchanged, yet, at present, a new functionary, known as the "cadet confectioner," is allowed to keep open on cadet limits a place of resort which cadets are known to frequent daily to enjoy the table, and where they may treat their fellows without stint or limit. Thus one of the elements of equality which formerly existed among the cadets is destroyed, and the son of a wealthy man may fare sumptuously, while the poor boy must confine himself to such food as the mess-hall affords.

Many other causes might be mentioned as contributing to the present condition of things, and many other illustrations of the change from the custom of former years might be given. But those members of the board who have been appointed by the Vice-President and Speaker of the House of Representatives, and whose duty it is by law specially made to report to Congress upon this subject, will doubtless do so at length, and therefore this board pass the subject without as full a consideration as would otherwise be demanded. But this board, feeling the importance of a high state of discipline to the efficiency of the Academy, to accomplish the purpose for which it is maintained, earnestly recommend a return to the stricter kind of discipline which was administered years ago. An army must be governed by different methods and upon different principles from a civil society, and to an army and to every military establishment discipline is a necessity.

With a view to this end, in the opinion of this board, the superintendent and commandant of cadets should always be officers of high rank, who, by their age and military distinction, can command not only the respect but the implicit obedience of the cadets.

REPORT OF THE BOARD OF VISITORS FOR 1864.

The Board of Visitors invited by the Secretary of War to visit the Military Academy at West Point, to make "a full and free investigation of the Military and Scientific instruction of the Cadets, and of the internal police, discipline, and fiscal concerns of the institution, and communicate the results of their observations, with any suggestions for the improvement of the Academy," consisted of the following members :

Oliver S. Munsell, *Illinois*, PRESIDENT. Birdsey G. Northrop, *Mass.*, SECRETARY. Thomas M. Allen, *Missouri*. Henry Barnard, *Connecticut*. Samuel W. Bostwick, *Ohio*. Thomas Brainard, *Penn.* Cyrus Bryant, *Illinois*. A. W. Campbell, *West Virginia*. Ralph W. Emerson, *Mass.* Oran Faville, *Iowa*. John H. Goodenow, *Maine*. P. D. Gurley, *District of Columbia*. Oliver P. Hubbard, *New Hampshire*. Edward Maynard, *District of Columbia*. Henry S. Randall, *New York*. William H. Russell, *Conn.* William A. Rust, *Maine*. Albert Smith, *New Hampshire*.

The Visitors introduce an account of their inspection with the following remarks :

Some of our number came with objections and prejudices against the Academy. But all doubts as to the value and importance of the institution were banished by the evidence presented in the course of our personal inquiries into its present condition and actual results. The Mexican war clearly evinced the value of military science. Still more has the present war demonstrated the necessity of maintaining, and even enlarging our Military Academy.

This Academy belongs to the whole nation. So far as its purpose and numbers permit, it is the Peoples' College. It is maintained for the special benefit of no particular section, sect, party, or class. We could discover no evidence of aristocracy, exclusiveness, or caste. The Cadets represent all sects and parties, and almost all nationalities, now naturalized among us. The poor are not denied its privileges, for the expenses of all are paid alike. If particular dogmas have at any time prevailed here, the fact is an accidental, rather than an essential one, and should be referred to the ruling influences at the seat of government, and not to any inherent element in the local organization at West Point.

Their Report has been communicated to the Secretary, by whom the same will be transmitted to Congress—to receive such attention as the Secretary and Congress may see fit to bestow on its various suggestions. By permission of the Secretary, we transfer to our pages, that portion of the Report in which the subject of the Admission of Cadets—their number, age, attainments, and mode of appointment, is discussed with considerable fullness.

ADMISSION OF CADETS.

In concluding the report of their inspection of this, the only national military school, to which the country naturally looks for the organization and command of her armies, and the construction of her works of defense, the Visitors would respectfully urge on the consideration of the Department, an immediate and thorough revision of the law and regulations relating to the admission of Cadets—the number, the qualifications required, and the mode of ascertaining these qualifications, and of making the appointments. No matter how appropriate may be the location, how complete the buildings and equipment, and how skillful and faithful the teachers, unless there is a constant and sufficient supply of pupils of the right age, character, bodily and mental vigor and aptitude, as well as aspirations for a military career, the public will be disappointed in the practical workings of the institution.

1. The number of pupils in the Military Academy is determined by the law, which limits the Cadet Corps of the United States Army to one cadet for each Congressional District in the several States, one for each Territory, one for the District of Columbia, and to forty more, whom the President may appoint, ten each year, from the country at large, without reference to their residence. Under this law, if each Congressional District and Territory were represented, the whole number of cadets would be two hundred and eighty, but owing to vacancies by withdrawal or non-appointment in Congressional Districts in the States involved in the rebellion, the number at this time is reduced to less than two hundred—and the graduating class of 1863, to twenty-five—a number altogether inadequate for the regular army in time of peace, and much below the present and future exigences of the service, while the expense of the Academy remains the same. We are assured by the Superintendent that without any additional expense for building and material equipment, and with a small advance in the pay of pupils and assistant teachers, the Cadet Corps could be increased to four hundred. The Visitors are unanimously of the opinion that the corps should be at once increased to this number, and should be maintained at this maximum at all times, by authorizing the President to appoint to any vacancy which may remain unfilled for three months by reason of nullification, secession, rebellion, or any other cause. If the appointments to fill and maintain the Corps at this maximum, can be selected out of the many American youths, ambitious to serve their country in the army, on the plan of an open competi

tive examination in the several States, the Visitors believe that ninety out of every one hundred thus appointed will go through the whole course with honor, and the average ability, scholarship, and good conduct of the whole corps, will equal that now reached by the first ten of each class.

2. By the original law providing for the appointment of cadets to the corps of Artillerists and Engineers, and by the act of 1812, by which the Military Academy was made to consist of the Corps of Engineers, the candidates for cadets were to be "not under the age of fourteen, nor above the age of twenty-one years." By regulations of the Department the minimum age is fixed at sixteen years, and the Visitors believe that the interests of the Academy and the military service, will be promoted by making the legal age for admission between eighteen and twenty-one years. The four years preceding and including eighteen are peculiarly the formative period of the body, mind, and character, and should be devoted to the acquisition of right habits of study and general culture, as the proper foundation for all special and professional training, which should not be commenced until the constitution is consolidated, the taste for a pursuit is distinctly pronounced, and the moral character is naturally developed under the influences and supervision of home. The experience of Europe, and particularly of France and England, has led to the abandonment of juvenile military schools, as nurseries for officers; and the very common practice of nominating candidates who exceed the legal age, expresses the convictions of our own people that military studies now require more maturity of mind than was deemed necessary in the early history of the Academy. The present want of uniformity as to age and mental discipline explains in part, the wide disparity of attainments between members of the same class. With few brilliant exceptions, confined to cadets of rare aptitude and vigor of mind, the most solid practical education is obtained by those who come to West Point when at least eighteen years of age, with at least a good preparation in English studies, and a taste for mathematical and military pursuits.

3. The school attainments required by law of candidates for admission to the Military Academy, are as rudimentary and limited as our language can express—far below, we are assured, the requisitions of any similar school in the world. Prior to 1812, when the Academy was little more than a school of mathematics, taught by two professors, in the line of geometrical and algebraical demonstrations, and the practical exercises were confined to surveying, and the simplest forms of military construction, the candidates were not

subjected to any examination. The act of 1812, provides that "each candidate previously to his appointment, shall be well versed in reading, writing, and arithmetic," and by regulations of the department, the knowledge of arithmetic is restricted to only a portion of that science. There were special reasons at the start for thus limiting the amount of knowledge, when the minimum age of admission was fixed at fourteen years, and the Academy was properly a juvenile military school, like all cadet schools in Europe at that time. At that date, science entered far less than now into the art of war, as applied to the means and modes of attack as well as of defense. Besides, the opportunities of even elementary instruction were then far less widely or equally distributed through all the States than now, when the general government has set apart over sixty million acres of the best land in aid of primary schools in all the new States, and nearly every State legislature has subjected the entire property of their several communities to taxation for the support of public instruction. Now that the requirement as to age has been advanced from the fourteenth to the sixteenth year, and by the voluntary action of parties having the nomination, or seeking the appointment, to the eighteenth year, we see no reason why the school attainments corresponding to, and compatible with that age, should not be also required. The least that should be demanded of any candidate is that amount of general culture and attainments, which constitutes a good English education, and which it is now the aim of the public schools, and their boast, to give without partiality, to all, poor and rich alike, if the advantages they proffer are properly improved. And we see no injustice in fixing the standard of general attainments and culture as high as that now reached by cadets in good standing at the close of their first year in this Academy, including even an elementary knowledge of one modern language. If the French, or Spanish, or German language is to be mastered by American officers for the sake of the military science and literature which it embodies, or its uses in conversation, or official duty, called for by the exigences of our foreign relations, both in peace and war, its acquisition should be begun as early in life as possible, while the organs of speech are flexible, and the grammatical and etymological difficulties of a new language are more readily surmounted. Judging from the results of the examinations we have witnessed here, and what we know of the attainments made by students in colleges elsewhere, very few persons, who begin the study of modern languages, late in their school life, in the pressure of other studies, ever attain the mastery of even one, so as to be able to use it as an instrument of written or spoken com-

munication, or make its treasures of science and literature a familiar possession.

Whatever may be thought of the disciplinary and practical value of earlier and longer attention to one or more modern languages, to those, whose minds will otherwise be almost exclusively subjected to the peculiar training of the mathematics, there can be no doubt that young men who have reached the age of eighteen, and desire to profit by the special studies of a purely military school, should exhibit in their language, habits, and attainments that intellectual, moral, and esthetical culture, which the public or private schools of any State can, and should give to any youth of average ability of that age.

4. Low as the requirements for admission now are, from a defective and vicious mode, as we believe, of selecting candidates, and making appointments to the Cadet Corps, the number of candidates nominated and provisionally appointed, who present themselves at West Point and shrink from any examination, or who fail to pass even the entrance examination which is confined to reading a few passages of familiar English prose or verse, and writing a few sentences from dictation, and performing on the blackboard a few operations of the most elementary character in arithmetic,—or being admitted, are not able to gain or keep a respectable standing for one year, although the studies of the first year belong to a general, and not a military education,—or by a “special providence,” manage just to escape dismissal from incompetency, and graduate,—is disgracefully large. The country abounds in youth, competent to master and profit by the course of instruction here provided, and ambitious of enjoying these privileges of education, and opportunities of distinction; and a selection by lot from the juvenile population of any State, could not result in so few prizes, and such a dreary waste of blanks as have been realized from the appointments made, in the necessary absence of all personal knowledge of the candidates by the appointing power, on the recommendation, or nomination of one or more persons in each Congressional District, in no way responsible for the incompetency of the individuals named.

From official tables prepared from the records of the Academy,* it appears that the proportion of all who graduate, to all appointed in successive periods of ten years, is as follows.

For Ten Years, from 1802 to 1811,	0.606
“ “ “ 1812 to 1821,	0.289
“ “ “ 1822 to 1831,	0.377
“ “ “ 1832 to 1841,	0.472
“ “ “ 1842 to 1851,	0.510
“ “ “ 1852 to 1861,	0.523

* See Boynton's "History of Military Academy at West Point," p. 252.

From official returns furnished by the Superintendent, a portion of which are hereto appended, (B. C.) it appears that out of 4626 who have been admitted to the Corps of Cadets, (including two hundred now members,) only 2020 were able to graduate, and of those who failed, (2398, excluding those who remain) more than three-fifths broke down in the first year in studies which in almost every military and scientific school in Europe are required for admission. Out of the whole number regularly nominated, recommended, and provisionally appointed from 1841 to 1863, more than twenty per cent. failed to pass the examination, as to health and constitution, or the slight examination in reading, writing, and ciphering. And this proportion would be increased by the number who withdrew in advance from the consciousness of their unfitness for a position to which ambitious and influential friends had promoted them. Out of the whole number admitted from 1851 to 1862, more than one-third failed during their first year. The proportion of graduates to the whole number admitted is 46 per cent. and of those who failed to graduate, 54 per cent.

The Visitors are unanimously of opinion that in a matter of such vital importance as the right organization and command of the armies of the United States, on which the honor and safety of the whole country depend, the original appointment to the Cadet Corps which is the *first step* in promotion to such command, as well as to all the special duties which attach to the engineer service, should not be made in any case except on the principle of finding the best youth for the place—having the health, character, vigor of body, maturity and aptitude of mind, and preparatory knowledge, to profit by the opportunities of the special military training provided by the government for this corps, and a decided taste and expressed desire for a military career. And to this end, the law and regulations should provide for the rigorous exclusion in advance of all who can not present testimonials from the teachers under whose instruction they have been for the two years next previous, that in their opinion they possess the qualifications above specified, and who do not make a written declaration of their desire to enter the Corps for the purpose of qualifying themselves to labor in the military service of the government, to which they will bear true allegiance against all enemies foreign and domestic, and over all state and local authority, government and constitution whatever. To select the best out of any number who may present their testimonials and written declarations, public examination should be held of all applicants at such times and places as the

law should prescribe, by such persons and under such regulations as the Department shall be authorized to appoint; and the results of such examination of each person examined, and in each subject specified by law, should be returned to the Department, in which return the applicants should be arranged in the order of merit. From this merit roll, revised from year to year, all appointments to the Cadet Corps should be made, and in the order of merit as assigned by the examiners.

This principle of appointment and promotion by merit which we advocate, is in full and successful operation in the classification and advancement of cadets in the Academy itself, and the country will be satisfied if the same principle can be as fairly and rigorously enforced on all who aspire to enter, as well as on all promotions in the service after leaving the institution. The principle itself, of selection by merit, either in the mode of public examination, or of careful and searching inquiry by competent and impartial educators, designated for this purpose by the parties to whom custom and not law had assigned the grave responsibility of nominating candidates, has been voluntarily applied in several Congressional Districts. Not a cadet known to have been thus selected and appointed, has ever broken down from want of vigor of body or mind, or failed to reach and maintain an honorable position on the merit roll of the Academy; and to this careful selection by those who felt the responsibility of the privilege accorded to them, is the country indebted for its most eminent and useful officers.

To the objection that selection by public competitive examination, will involve expense, we reply, that any expense which will do away with the prejudices against the Academy, which the present system of patronage has done so much directly and indirectly to evoke and foster, and which will, at the same time, exclude incompetent, and secure the services of vigorous, talented, well trained officers, for every arm of the service, will be well incurred. But, in our opinion, there will be no more expense in selecting and educating a given number of cadets on this plan, than on the present. The two thousand cadets who were appointed by patronage and failed to graduate, cost the government, directly and indirectly each year, a much larger sum than it would have taken to have excluded them in advance from the institution by competitive examination, and filling their places by better men; and their exclusion by substituting better material, would have been an incalculable gain to the Academy, facilitating its discipline, increasing the value of its instruction, and giving to the army a larger number of competent officers.

The objection, that the mode of making all appointments by open competitive examination, will deprive the President, and members of Congress of the opportunity of appointing the sons of meritorious officers, or poor, and it may be, orphan boys of genius—is more plausible than real. That such appointments have been made, to the manifest advantage of the country, is certain. But we know not a single instance of such marked success, on the part of a cadet thus appointed, as to attract investigation, where the same youth would not have secured the appointment in open competition. But if he had failed, and the place had been filled by one better qualified, the country would have been no loser, and he would have suffered no injustice or neglect. We fear, from an abuse of this amiable motive of rewarding meritorious parents, and assisting the poor, that in some instances, weak, ignorant, and incompetent persons are appointed, as though this Academy were a public charity school, or home for orphans; and not a special school for military instruction and training, for which the great object, in any mode of appointment, is to select those who will profit most by its advantages, and do the country the greatest service after being thus educated at its expense.

To the objections that, in these examinations, "the most forward boys will have the best chance, and such boys seldom make the best men," and that no amount of book knowledge can give assurance of the great military genius, "which must be born and not made," we reply, that these objections apply just as forcibly to any plan of nomination, and to every system of instruction. But we believe that at those examinations can be and will be so conducted as to distinguish what is precocious from what is the healthy development of the faculties, what is solid from what is showy in attainments, what is vigor, grasp and aptitude of mind from what is mere memory and quickness, in competing candidates. All of these candidates must bring the testimonials of their former teachers, as to their character, ability and attainments, must have reached the age of eighteen years, and will be called upon to exhibit orally as well as in writing their knowledge and opinions on subjects which require judgment, reflection, presence of mind and decision. If a young man of eighteen and upward shows that he has done well what he had undertaken to do thus far in life, that he has preserved a sound constitution in vigorous health, has mastered the studies appropriate to his age, is honest, diligent, thoughtful, teachable, courageous, courteous, and ambitious of excellence generally, then the country has every assurance which can be given that on this basis of character, talents, attainments, and application, a solid fabric of military

education can be reared, and that in the hour of trial he will show not only courage to dare, but competence to devise, influence and command. In the responsibilities of such an hour will be found the fruitage of all his previous promise and preparation.

To the objection—"that a competitive examination must always result in the success of the best instructed, wholly irrespective of the capacity of the competing candidates; and the plan will thus secure for the country the services of dull mediocrity well instructed, and exclude genius without opportunities of development,"—we reply, that this does occur now under the present system, but need not, and never has been the result of competitive examination properly conducted. The examination which we propose to have inaugurated, is not to search simply or mainly for the results of memory or diligence, but for "vigor and aptitude of mind" in reference to the special purposes of this Academy. The examination will be poorly conducted, and will operate here widely differently than elsewhere, if it does not only exclude in advance palpable incompetency, and ascertain beyond doubt the possession by all the successful candidates, of that knowledge which is the basis of a special military training, but also seek, and give credit in the result, for the quick eye, the firm set mouth, the vigor and elasticity of body, the rapid decision, the contempt of danger, the competency to influence and command—and all the other marks of the incipient soldier and officer, as well as the mathematical tastes and qualities of mind which indicate the successful engineer. Composed as every Examination Commission might be, of at least one experienced officer of the United States Army, of one member (past or present,) of the Academic Board, of one officer of the State Militia, as well as one or more experts in educational matters, the military qualities of body, character and mind, will be sought for as well as the mere results of memory, diligence and good opportunities of instruction, in the competing candidates.

To the objection, that candidates will make special preparation, and in the phraseology of the class-room, "cram for the occasion," we reply,—to such preparation and cramming as cover the whole ground of a good English education, we can see no possible objection; the more of it, the better. If the preparation is only crude and on the surface, we are sure that the ploughshare of interrogation requiring precise answers, oral and written, will very soon expose its superficial and undigested character.

To the sifting out and selection by open competition, might be added a period of probation for the successful candidates—making

their first year's connection with the academy a further test of capacity, preparation, and aptitude for a military career. No pains and no expense should be spared to exclude from the academy and the service, incompetent, indifferent, and unteachable cadets and officers; such men are "cumberers of the ground," and no influence and inertia should be potent enough to resist the inevitable working of the principle of open competition, applied at frequent intervals, and at every stage of promotion, in getting rid of such cadets and officers.

The fact that such a public examination is to be held from year to year, and that the educational privileges of this Academy, and immediate and prospective promotion in the army are the prizes which await success, will, in five years call forth more latent genius in the obscure corners and poor families of a State, than has ever been sought out by the lantern of patronage, (which is now seldom carried beyond the family, or neighborhood, or party of the person having the nomination,) since the foundation of the Academy. With the network of public and elementary schools, woven by state legislation over all the land—with public schools of a higher grade, and special schools of science and the arts already established, at short intervals, or which will be called into existence by the demand for a higher and different preparation from that now given, it may be safely said, that no genius, likely to attract the attention of a member of Congress, will exist, which will not be developed under the same influences by which the "dull mediocrity" of the rest of the community will be educated. Once set in the path of instruction and development, real genius will assert its own claims to attention, and will, on a first or second trial, before any board of examiners, make its vigor, courage, and persistence felt. The result will be the same in this institution, as in every really good Public High School and Free Academy—all classes as to wealth, occupation, religious and political affinities will be represented,—provided the regulations are judicious, and the examination practical and impartial.

This is the experience of the competitive principle in France ever since it was inaugurated by Carnot in the Polytechnic School at Paris, and Napoleon extended its application to every public special school, and to promotion in every department of administration, civil as well as military. And where is there more general administrative ability, central and local? Where are abler or better trained officers, military and civil, to be found? Where does "well instructed mediocrity," no matter how well backed up by wealth, find less favor, or genius for organization and command, no matter how poor or unfriended, find such speedy and sure recognition?

The experience of England in the trial of the two principles of patronage and competitive examination for admission, not only to the military and naval schools, but to the East India and the Civil service generally, is instructive, and especially on the points which we are now considering. Prior to the Crimean war, (which exposed the utter incompetency of a large number of officers, who had obtained their military education and promotion by patronage and purchase,)—admission to the Royal Military Academy at Woolwich, was by nomination, and the age fixed by law, was fourteen years.

The Secretary of War was satisfied by personal inquiry in 1855, that nothing could do so much to narrow and cramp the full development of a boy's mind, as his long confinement from so early an age among lads having the same limited attainments, special studies, and destination;—that a majority of those admitted on nomination and through influential friends, had only the minimum qualifications specified by law;—that to most cadets the severer studies were irksome and imperfectly mastered, on account of immaturity of mind and imperfect preparation;—that the certainty of promotion by influence and purchase, after obtaining the diploma of the Academy, and not unfrequently without it, took away all stimulus for continued study;—that resignations were common, when the profession of arms ceased to be a pastime, or could be exchanged for something that paid better—and the service was incumbered by officers without large and trained capacity for command, although not deficient in courage and dash. Under these circumstances the Secretary of War, advanced the minimum age of candidates from fourteen to eighteen years, removed all the general studies of the Academy into the preparatory course, and opened the doors of admission to those only, who could prove their title to enter by personal merit, in a free competitive examination. The same principle was applied to appointments and promotion in the new regiments called for by the exigences of the great war in which England found herself engaged.

Subjects, time, and places of examination, were officially made known throughout the kingdom, and commissions to conduct the examinations were appointed, composed of men of good common sense, military officers, and eminent practical teachers and educators. The results as stated in a debate in Parliament, five years later, on extending this principle to all public schools, and to all appointments and promotions in every department of the public service, were as follows:—In the competitive examinations for admission to the Royal Military Academy, candidates from all classes

of society appeared—sons of merchants, attorneys, clergymen, mechanics, and noblemen, and among the successful competitors, every class was represented. Among the number was the son of a mechanic in the arsenal at Woolwich, and the son of an earl, who was at the time a Cabinet Minister—the graduates of National Schools, and the students of Eton, and other great Public Schools. The most successful candidates were between the ages of eighteen and nineteen, as is found to be the case in competitions for admission to the Polytechnic School of France. Out of 579 successful candidates for the latter, between 1854 and 1857, 450 were over eighteen years. But the most important result of the competitive examinations for Woolwich, was the superior mental ability, the vigorous health, and eagerness for study exhibited by the new classes, and the small number who have failed on account of ill-health or incompetency. On this point, Mr. Edward Chadwick, in a Report before the National Social Science Association, at Cambridge, in 1862, says:—

“Out of an average three hundred patronage appointed cadets at the Royal Military Academy at Woolwich, for officers of engineers and the artillery, during the five years preceding the adoption of the principle of open competition for admission to the Academy, there were fifty, who were after long and indulgent trial, and with a due regard to influential parents and patrons, dismissed for hopeless incapacity for the service of those scientific corps. During the five subsequent years, which have been years of the open competition principle, there has not been one dismissed for incapacity. Moreover, the general standard of capacity has been advanced. An eminent professor of this university who has taught as well under the patronage as under the competitive system at that Academy, declares that the quality of mind of the average of the cadets, has been improved by the competition, so much so, that he considers that the present average quality of mind of the cadets there,—though the sorts of attainment are different, has been brought up to the average of the first classmen of this (Cambridge) university, which of itself is a great gain. Another result, the opposite to that which was confidently predicted, by the opponents to the principle, has been that the average physical power or bodily strength, instead of being diminished, is advanced beyond the average of their predecessors.”

The opening of the Royal Military School at Woolwich to competition, on the basis of a more advanced age, and more thorough general education, has not only drawn in pupils of higher average ability and attainments, but has enabled the authorities to extend

the course of instruction. In this, the only safe way, they solved the problem which has tortured the ingenuity of the friends of our Academy—of crowding new studies acknowledged to be desirable if not indispensable, into a course already too crowded for cadets so unequally, and, many of them, so imperfectly prepared for the course as it is.

Another result of immense importance to the educational interests of Great Britain has followed the introduction of these open competitive examinations for appointments to the Military and Naval Schools, to the East India service, as well as to fill vacancies in the principal clerkships in the War, Admiralty, Ordnance and Home Departments of the government:—a stimulus of the most healthy and powerful kind, worth more than millions of pecuniary endowment, has been given to all the great schools of the country, including the universities of England, Scotland and Ireland. As soon as it was known that candidates, graduates of Trinity College, Dublin, had succeeded over competitors from Oxford and Edinburgh in obtaining valuable appointments in the East India service—the professors in the latter universities began to look to their laurels. As soon as it was known to the master of any important school, that some of his leading pupils might compete in these examinations, and that his own reputation as a teacher depended in a measure on the success or failure of these pupils, he had a new motive to impart the most vigorous and thorough training to his whole school.

The success of candidates who had never seen the inside of a government Military School, in open competition for appointments to the Artillery and Engineer Corps, in the new regiments raised in 1855, over those who hold the diplomas of the Royal Military Academy, was one of the reasons which led to a thorough revision of the whole system of military education.

These results, imperfectly presented here, will, the Visitors believe, be realized from the changes, which they now suggest, in the requirements as to age, attainments, capacity and aptitude, and especially in the mode of ascertaining these qualifications, of candidates for appointments to the Cadet Corps of the United States Army.

To the present low requirements, and mode of selecting cadets, do they attribute the hostility which they know exists, to some extent, against this Academy, in different parts of the country. The charges of personal, and political favoritism in making nominations, and the absence of reasonable search, among all the youth of a district, for the best qualified in natural endowments and acquired

knowledge irrespective of the poverty, or wealth, or occupation, or family, or party relations of the parents or guardians, we are forced to believe, in too many instances, to be well founded. To these hasty and injudicious nominations, do we attribute the bitter disappointments of so many individuals and families caused by the numerous failures to pass the almost formal entrance examinations in reading, spelling, penmanship, and elementary operations of arithmetic, or if admitted, to maintain a respectable standing in conduct and studies during their first year's connection with the institution. To this inequality of preparation and maturity of mind on entrance, do we attribute the astonishing disparity of capacity and attainments in the members of the same class, and the very large proportion of all who are admitted, who fail to graduate in very high standing as men of science or military promise.

To this want of preparatory knowledge, maturity of mind, and taste for mathematical and military studies, do we attribute most of the difficulties of internal administration, and class-room instruction. So long as the cadet is a boy, or if full grown in body, a youth with only boyish tastes, and without scholarly and soldierly aspirations,—so long as not a few are in the Academy, not because they sought its privileges from an inward and irrepressible impulse to a military career, but for the eclat of a military position to be resigned when such position involves sacrifices; so long will the admission of each new class, and especially, the period of encampment be signalized not only by boyish pranks, but by personal outrages on unoffending members of the same corps, which we had supposed to belong to the dark ages of collegiate institutions, when boyish inmates were congregated in large numbers away from the restraints of family discipline;—so long will the time, skill, and patience of able professors, which should be devoted to the elucidation of difficult scientific principles and their applications to military art, be engrossed in supplying the defects of an elementary education, which should have been obtained by the cadet as well, or better, at home; so long will the severe mathematical studies, and their special applications, difficult enough to task a well disciplined mind even with the preparation provided in a thorough knowledge of arithmetic, algebra, and geometry,—be irksome in the extreme, and be never mastered to any useful purpose to the army of the United States, by more than one half of the graduates of the Academy;—so long will the country be disappointed in the subsequent career of many graduates, for whose military instruction and training all these appropriate and costly preparations have been made.

in view of these and other considerations the Board of Visitors unanimously recommend that the law and regulations relating to the military academy be so modified as to provide as follows:

I. The Cadet Corps of the army of the United States shall consist of four hundred members, to which each state and territory shall be entitled to a number equal to its representation in the Congress of the United States, and the remainder shall be designated by the President from the country at large, including the District of Columbia; and he shall also fill, in the same way, any vacancy which for any cause may remain unfilled, for three months after the annual examination in each year.

II. No person shall be appointed to the cadet corps until he has been found qualified in the particulars designated by law, after a public examination conducted in such places, at such times, and in such manner as Congress shall prescribe; from which examination no person resident of that portion of the country for which the same is held, shall be excluded, who shall present credentials from the teacher or teachers whom he had last attended, that he is over seventeen, and under twenty-one years of age, of unblemished moral character, and personal habits, of good physical strength and constitution, and has given evidence of aptitude and vigor of mind for the studies and duties of a military career. The examiners shall make return under oath to the Secretary of War, of the persons so presenting themselves, examined, and found qualified, arranged in the order of merit, specifying the residence and school or schools which they have attended in the two years previous, and the degree of merit exhibited in each subject of the examination. And all appointments to fill vacancies for any state or territory, or for the country at large, shall be made from these returns, and in the order of merit as assigned by the examiners, until the same shall be revised by new regulations of the Department.

III. No person shall be returned to the Secretary of War as a suitable candidate for admission to the Cadet Corps, unless he

1. Shall be *over* seventeen, and under twenty-one years of age.
2. Shall possess an unblemished moral character and correct personal habits.
3. Shall be in good health, and in no way incapacitated by want of vigor and elasticity of physical constitution for military service.
4. Shall possess vigor and aptitude of mind for the studies of the Military Academy, and shall give evidence, oral and written, of a good English education, which, in view of the wide spread facilities of instruction in public and private schools, might very properly embrace

(a.) The correct use of the English language, in speaking, reading, and writing the same.

(b.) Penmanship, book-keeping, and elementary drawing.

(c.) The ability to perform with facility and accuracy the various operations of arithmetic.

(d.) The elementary principles of algebra and geometry.

(e.) A thorough knowledge of American geography and history, and the leading features of the Constitution of the United States, and of the State of his residence.

(f.) Or so much of the subjects abovespecified as shall be deemed indispensable to the immediate and profitable attention of the Cadets on their admission to the special studies and occupations of a military school.

5. Shall make a written declaration of his desire to obtain admission to the Cadet Corps for the purpose of qualifying himself for the military service of the United States, which service he assumes from the date of his appointment as cadet, to continue in the same for a period of at least sixteen years—bearing true faith and allegiance to the Constitution and government of the United States, against all enemies, foreign and domestic, and paramount to all obligations to any State government, authority, or constitution.

APPENDIX.

The Appendix to the Report of the Visitors of the Military Academy for 1863, contains the following tables and documents referred to in the Report.

TABLE A.—Showing the condition in life of the parents of the Cadets of the United States Military Academy from 1842 to 1863 inclusive.

TABLE B.—Showing the number of Cadets actually admitted into the United States Military Academy from each State and Territory from its origin March 16th, 1802, to October 19th, 1863.

TABLE C.—Showing the number of Cadets who have graduated at the Military Academy, from its origin to 1863, with the State and Territories where appointed.

TABLE D.—Showing the whole number of Cadets admitted and the whole number graduated from each State and Territory from 1802 to October 1863, together with the percentage of those who graduated, and of who failed, out of the whole number admitted from each State, and the number of Cadets to which each State and Territory is now entitled, according to the apportionment of members of Congress, under the Census of 1860.

STATEMENT EXHIBITING THE CONDITION IN LIFE OF THE PARENTS OF THE CADETS OF THE U. S. MILITARY ACADEMY AT WEST POINT, NEW YORK, FOR THE LAST TWENTY-TWO YEARS, FROM 1842 TO 1863, INCLUSIVE.

	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863
Fathers are or were farmers or planters.....	50	61	61	65	72	67	69	75	70	65	67	65	66	68	60	52	48	57	65	59	33	88
Fathers are or were mechanics.....	14	12	15	23	22	25	22	21	16	14	14	14	13	12	17	20	23	15	100	12	13	8
Fathers are or were judges or lawyers.....	57	25	20	25	33	30	33	33	34	33	34	35	36	36	35	39	32	32	36	33	35	39
Fathers are or were merchants.....	18	15	23	27	29	31	38	38	36	35	35	35	39	40	30	24	41	25	23	23	24	
Fathers are or were boarding-house or hotel keepers.....	5	2	4	8	7	6	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Fathers are or were physicians.....	12	15	15	13	11	19	21	15	13	14	14	13	9	8	9	17	16	10	18	10	18	
Fathers are or were in the army, navy, or marine corps.....	14	16	16	12	13	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
Fathers are or were clergymen.....	4	6	6	6	8	8	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Fathers are or were in the civil employment of the Gen- eral or State government.....	5	15	16	9	5	2	8	7	7	8	10	11	14	13	13	7	31	29	18	6	11	
Miscellaneous: as, bank officers, editors, professors, mas- ters of vessels, &c.....	15	11	15	22	35	36	41	24	32	39	30	26	14	25	13	13	6	37	44	39	42	
Occupation not stated, or no occupation.....	48	34	33	17	1	2	2	8	7	11	13	7	10	19	15	20	25	89	22	18	13	
Total.....	221	212	224	236	241	232	242	240	244	239	247	252	257	260	225	221	251	266	279	302	218	360
Of these numbers, there are without fathers living.....	26	37	44	45	43	41	34	45	40	45	36	35	33	33	34	46	33	43	25	25	36	
Without fathers or mothers living.....	23	16	15	15	21	20	15	16	26	17	19	17	15	9	6	7	7	8	10	11	9	
Total orphans.....	49	73	62	63	63	61	52	64	66	62	55	52	44	42	39	31	53	41	52	36	34	
Of these numbers the parents are stated to be in moder- ate circumstances.....	156	120	164	122	139	123	103	203	215	207	218	205	206	215	196	193	216	218	239	184	199	
Of these numbers the parents are stated to be in reduced circumstances.....	133	26	26	36	35	38	40	29	25	16	9	5	8	7	8	6	7	6	2	5	5	
Of these numbers the parents are stated to be in indigent circumstances.....	6	8	8	8	4	4	4	4	3	2	.....	1	1	1	1	1	1	.....	.....	.....	1
Of these numbers the parents are stated to be in inde- pendent circumstances.....	6	10	12	6	4	5	4	2	14	20	22	16	18	17	26	41	84	16	12	12	17	
Of these numbers the parents are stated to be in un- known circumstances.....	39	16	19	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Total.....	221	212	224	236	241	232	242	240	244	239	247	252	257	260	225	221	251	266	279	302	218	360

NOTE.—Of the 37 Cadets admitted, to October 19th, 1863, as given in the table on page 321, 46 were appointed from the U. S. Volunteers engaged in the War, who held the following rank: 1 Captain, 5 First Lieutenants, 3 Second Lieutenants, 10 Non-commissioned Officers, 20 Privates, 1 Musician, and 6 Clerks, from military departments.

Total.	109,78	104,239	42	109,650	101,434	41,179	370	1	190,159	139	88	51	67,849	190	175	109	51	67,178	86	90	11	14	17	10	6	8	8	8	8	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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NOTE.—Owing to the destruction of the records by fire in 1888, the States in which some of the Cadets resided previous to that event is given; though it is believed they were appointed "At Large." The President of the United States having determined late in August, 1863, to fill all the existing vacancies from the second States there were in the Fourth Class, numbering 91, on the 10th of October, 43 thus appointed. 10 Cadets similarly appointed but not, on that date, been examined for admission into the Military Academy.

THE FOLLOWING STATEMENT EXHIBITS THE ACTUAL NUMBER OF CADETS WHO HAVE GRADUATED AT THE MILITARY ACADEMY, FROM ITS ORIGIN TO THE PRESENT DATE, WITH THE STATES AND TERRITORIES WHENCE APPOINTED.

[illegible]

TABLE D.

EXHIBITING THE WHOLE NUMBER OF CADETS ADMITTED TO THE MILITARY ACADEMY FROM EACH STATE AND TERRITORY, AND THE WHOLE NUMBER GRADUATED.

STATE AND TERRITORY.	Admitted.		Graduated.			Fail'd to Graduate.		Remain.		No. in Army.
	From	Total.	From	Total.	Per cent.	Number.	Per cent.	No.	Per cent.	
Alabama,.....	1817	88	1822	26	.295	61	.693	1	.012	7
Arkansas,.....	1827	17	1841	5	.294	.....	.705	.....	.....	2
California,.....	1850	10	1862	1	.100	6	.600	3	.300	3
Connecticut,....	1802	102	1805	55	.539	43	.422	4	.039	4
Delaware,.....	1806	41	1808	18	.439	22	.539	1	.022	1
Florida,.....	1822	20	1826	6	.300	14	.700	.....	.....	1
Georgia,.....	1813	139	1815	44	.329	95	.670	.....	.....	3
Illinois,.....	1810	81	1819	30	.370	42	.519	9	.111	13
Indiana,.....	1812	109	1814	48	.440	52	.477	9	.083	11
Iowa,.....	1839	14	1843	6	.428	6	.428	2	.144	6
Kansas,.....	1855	3	.....	.....	.....	2	.667	1	.333	1
Kentucky,.....	1813	196	1819	83	.423	105	.531	8	.046	9
Louisiana,.....	1817	67	1819	15	.223	51	.761	1	.016	4
Maine,.....	1808	102	1811	54	.529	43	.422	5	.049	5
Maryland,.....	1802	179	1802	79	.441	95	.537	5	.022	5
Massachusetts, ..	1802	232	1802	131	.324	91	.392	10	.043	10
Michigan,.....	1814	38	1823	17	.447	18	.474	3	.079	6
Minnesota,.....	1850	6	1859	2	.333	2	.333	2	.333	2
Mississippi,.....	1819	51	1823	14	.274	37	.725	.....	.....	5
Missouri,.....	1802	67	1806	24	.358	37	.552	6	.090	9
New Hampshire, ..	1817	78	1808	47	.602	28	.359	3	.039	3
New Jersey,.....	1803	101	1806	51	.504	45	.446	5	.050	5
New York,.....	1802	650	1803	329	.506	289	.444	32	.050	31
North Carolina, ..	1803	190	1805	63	.331	127	.668	.....	.....	8
Ohio,.....	1813	243	1815	118	.485	105	.432	20	.083	19
Oregon,.....	1854	3	1861	1	.333	1	.333	1	.333	1
Pennsylvania, ..	1804	424	1806	197	.464	203	.479	24	.057	24
Rhode Island,....	1814	42	1817	20	.476	20	.476	2	.048	2
South Carolina, ..	1809	159	1806	59	.371	100	.628	.....	.....	6
Tennessee,.....	1815	178	1820	56	.314	122	.686	.....	.....	10
Texas,.....	1840	11	1853	3	.272	8	.727	.....	.....	2
Vermont,.....	1803	104	1804	75	.721	26	.250	3	.029	3
Virginia,.....	1802	379	1803	142	.374	237	.615	4	.011	13
West Virginia, ..	1863	1	.....	.....	.....	.....	.....	1	1.000	1
Wisconsin,.....	1837	17	1848	7	.411	7	.412	3	.177	6
Dist. of Columbia,	1806	113	1811	50	.443	62	.549	1	.008	1
New Mexico,....	1852	6	1861	1	.200	3	.600	1	.200	1
Utah,.....	1853	3	1858	1	.333	1	.333	1	.333	1
Washington,.....	1855	2	1861	2	.100	.....	.....	1	.500	1
Nebraska,.....	1858	2	1862	1	.500	.....	.....	1	1.000	1
Dakota,.....	1861	1	.....	.....	.....	.....	.....	1	1.000	1
Colorado,.....	1863	1	.....	.....	.....	.....	.....	1	1.000	1
Nevada,.....	1863	1	.....	.....	.....	.....	.....	1	1.000	1
At large,.....	1837	330	.....	159	.421	156	.473	35	.106	40
Unknown,.....	1803	26	.....	.....	.....	.....	.....	.....	.....	.....
Total,.....		4,626		2,020				210		294

The Totals in the column of Cadets admitted, graduated, and failed to graduate, for each State and Territory, and for the country at large, are obtained from Tables prepared by Capt. Boynton, in his "History of the United States Military Academy." The per centage of graduates, failures, &c., is calculated from the totals thus obtained. The minute accuracy of the results is slightly affected by the difficulty of assigning the twenty-six Cadets admitted, whose place of residence was unknown, to their respective States. The column of Cadets to which each State and Territory is entitled in the apportionment of members of Congress under the Census of 1860, is official so far as States not involved in rebellion are concerned; the latter is given according to the Census of 1850.

OPINIONS OF COL. THAYER AND OTHERS.

On the recommendations of the Board of Visitors as to the conditions of admission to the United States Military Academy at West Point.

EXTRACT from a letter of COL. SYLVANUS THAYER, Superintendent of the United States Military Academy, from 1816 to 1831.

"The Extracts from the Report of the Visitors at West Point, for 1863, I have read with the highest satisfaction, not to say admiration. The subject of the admission of Cadets, their number, age, attainments, and mode of appointment, is discussed in the most complete and able manner, *ne laissant rien à désirer*, as far as I can see. I am naturally the more pleased from finding my own views so perfectly reflected in many important particulars. The only difference I notice is the small addition to my standard of attainment for admission. I not only agree to that, but would raise the standard as high as Congress would be willing to adopt. The higher the standard, the more perfect will be the test of capacity. The subject, as you may well suppose, is not a new one with me. More than forty years ago I made my first effort to have the mode of appointment by nomination, done away with, and admission by open competition adopted. My last effort before the late one, was made in 1858, while I was in command of the Corps of Engineers, during the absence of Gen. Totten. At the same time, I recommended a higher standard of attainment, a Board of Improvement, and some of the other changes comprised in my "Propositions," but with little expectation, however, that my solitary voice would be heeded. After long despairing, I am now encouraged and cheered. Admission by competitive examination, open to all, may not be attained as soon as we wish, but come it must at no distant day. Let every future Board of Visitors recall the attention of the Government to your excellent Report; no new arguments are needed, and let all the publications devoted to the cause of education, agitate the question unceasingly.

We have been favored with the perusal of the "Propositions, referred to in Col. Thayer's letter, and submitted by him to the Secretary of War, in 1863, with "Suggestions for the Improvement of the United States Military Academy." So far as the Visitors go, their views, and those of Col. Thayer, are almost identical, but Col. Thayer's communication to the Secretary includes many other suggestions relating to the instruction, discipline, and administration of the institution, which we hope will be adopted by the Secretary, and embodied in the Regulations.

In addition to the modifications suggested by Col. Thayer, we should like to see the theoretical course at West Point reduced to two years; and Special Courses, or Schools of Application and Practice

established for the Engineer, Artillery, Cavalry, and Infantry service, open only to those who should show natural aptitude, and the proper amount of acquired knowledge, whether graduates of the scientific course of West Point, or any State scientific or classical school, in a competitive examination. In each of these courses or schools, there should be a graduation, and promotion, in the particular service, according to merit. Our whole system of military instruction should terminate in a *STAFF SCHOOL*, open only to those who, in addition to the knowledge required for graduation in at least two of the above special courses, should have had at least three years actual experience in service. While members of the Staff School, these candidates for the Staff Corps, should, if called for by the State authorities, assist without compensation, in conducting Military Encampments of the Officers of the State Militia, like those held every year in Switzerland, and corresponding to what is known in this country to Teacher's Institutes. The graduates of the Staff School, should constitute the Staff Corps, from which all vacancies in the higher offices of the Regular Army should be filled, and all appointments to new regiments be made.

EXTRACT from a letter of GEN. H. K. OLIVER.

I have read with the utmost care, the Extract from the Report of the Board of Examiners of the Military Academy at West Point, for the year 1863, and most heartily concur in the views therein set forth, and especially in that portion of it, which recommends a competitive examination of candidates for admission. In all its relations it is right. In fact it stands out prominently as the only proper mode of admittance.

My intimate acquaintance with the Academy, having attended the examination in 1846, by invitation, and again in 1847, as Secretary of the Board of Visitors for that year, enables me to speak with reasonable authority. These visits afforded me opportunities, which I improved to the utmost, and most minutely, to become intimately well informed of the effect of the prevailing method of selection, and of its practical results upon character and scholarship after admission, as well as to know, with what degree of fidelity, the institution was answering the intent of its founding, and the just expectation of the country; and I was then satisfied, and subsequent observation has confirmed me in my opinion, that whatever of deficiency prevailed, was traceable to the method of admission. Faithful teachers and faithful teaching will achieve great results, but they can not make good, incompetent natural endowments, nor infuse vigor and life into sluggish natures. I sincerely hope that the Government will feel the force of your views, and comply with your most commendable recommendations.

RESOLUTION adopted by the American Institute of Instruction at the Annual Meeting in August, 1863.

WHEREAS, the security and honor of the whole country require in the military and naval service the right sort of men with the right sort of knowledge and training; and whereas, the military and naval schools established to impart this knowledge and training will fail in their objects, unless young men are selected as students, of the right age, with suitable preparatory knowledge, with vigor of body, and aptitude of mind, for the special studies of such schools; and whereas, the mode of determining the qualifications and selecting the students, may be made to test the thoroughness of the elementary education given in the several States, therefor

Resolved, That the Directors of the American Institute of Instruction are authorized and instructed to memorialize the Congress of the United States, to revise the terms and mode of admission to the National Military and Naval Schools, so as to invite young men of the right spirit, and with vigor and aptitude of mind for mathematical and military studies, who aspire to serve their country in the military and naval service, to compete in open trial before intelligent and impartial examiners in each State, without fear or favor, without reference to the wealth, or poverty, or occupation, or political opinions of their parents or guardians, for such admission, and that in all cases the order of admission shall be according to the personal merits and fitness of the candidate."

EXTRACT from letter of Prof. Monroe, St. John's College, Fordham, N. Y.

I rejoice that some one has taken hold of this subject at last. It needs only to be understood to be adopted; for I can not see from what quarter any opposition to it can arise. You rightly observe that "all the educational institutions of the several States" are interested in this mode of appointment. Great Britain, France, and many of the Continental States admit to their military schools the most competent young men who present themselves, and the method is found to be as economical as it is equitable. Long years of *winnowing* is saved to the Government; for the subjects who present themselves are, of course, the most capable. For several years I was a witness of the beneficial effects produced on youth in France by the stimulation of their energies in order to undergo an examination for admission into the military or naval schools. Our present mode of appointment appears to be an anomaly; for while monarchies find it expedient to adopt a less exclusive mode of sustaining their military organizations, we still cling to one founded on patronage and prerogative. Many of our young men in different colleges and educational institutions have a taste and vocation to the military profession, and have an equal right to compete for a place in the only fields where such a taste can be gratified—viz., in the army and navy. These careers should then be open to them. There is danger and want of policy in suppressing the legitimate aspirations of young men in a nation which is, say what we can, passionately fond of military glory.

EXTRACT from the Report of the Board of Visitors of the U. S. Military Academy at West Point for 1864.

The main features of the Report of the Visitors for 1863 we most cordially approve, especially its recommendations of competitive examination, and raising the age and qualifications of candidates for admission. The only student who obtained his appointment through competitive examination (introduced into his district by the member of Congress upon whose recommendation he was appointed from the common schools* of New York) graduated at the head of his class this year.

* The successful candidate, out of twenty competitors, was a member of the Free Academy of the city of New York, and stood in scholarship about the middle of his class.

The beneficial effect on schools, as regards both pupils and teachers, of throwing open appointments in civil, as well as in military and naval service, to competition, and giving them to the most meritorious candidates, on examination, is thus commented on in the Report of the Queen's Commissioners on the Endowed Schools of Ireland:

This measure has received the unanimous approval of our body, who regard it as an effectual method of promoting intermediate education. The experience already obtained respecting the operation of public and competitive examinations, so far as they have hitherto been tried, leaves no doubt on our minds that the extension of this system would, under judicious management, produce very beneficial effects, both in raising the standard of instruction, and in stimulating the efforts of masters and of pupils. The educational tests adapted for examinations for the public service would be, in our opinion, of all others the most general in their character, and therefore, those best calculated to direct the efforts of teachers to that course of mental discipline and moral training, the attainment of which constitutes, in our opinion, the chief object of a liberal education. The experience of the civil service commission has shown the shortcomings of all classes in the most general and most elementary branches of a literary and scientific education.

These views are strongly corroborated by the testimony, appended to the Report, of prominent teachers and educators consulted on the subject:

Prof. Bullen, in the Queen's College, Cork, remarks:—"No movement ever made will so materially advance education in this country as the throwing open public situations to meritorious candidates. It has given already a great impulse to schools and will give greater. The consequence of throwing the civil service open to the public is already beginning to tell—although only in operation a few months, it has told in a most satisfactory manner in this city; and, from what I can see, it will have the happiest results on education generally."

Prof. King, Head Master of a Grammar School at Ennis, writes:—"These examinations have already caused improvements in my own school by inducing me to give instruction in branches which I had never taught before."

The Dean of Elphin, the Archdeacon of Waterford and the Bishop of Down, advocate the measure on the ground of its tendency to produce competition between schools, and to stimulate private enterprise. The Bishop of Cashel "thought that this competition would be more valuable than the endowment of schools giving education gratuitously."

In confirmation of the above views, and as an illustration of the benefits likely to accrue both to the cause of education and to the public service from the extension of the system of competitive examinations, we may add that, at the late competitive examination for certificates of merit held by the Royal Dublin Society, Mr. Samuel Chapman, who was educated solely by the Incorporated Society, as a foundation boy, obtained the first place and a prize of £5. In consequence of this success the Bank of Ireland immediately appointed him to a clerkship. Mr. Chapman was originally elected to the Pococke Institution, from a parish school, by a competitive examination; and on his leaving the Santry school Prof. Galbraith appointed him his assistant in Trinity College, in consequence of the skill in drawing which he exhibited, and his knowledge of mathematics, as proved by his final examination.

COMPETITIVE EXAMINATION AT WEST POINT.

DEBATE IN THE UNITED STATES SENATE, MAY 18TH, 1864.

THE Bill making appropriation for the Military Academy being under consideration, Senator Anthony, of R. Island, remarked on the following amendment:

And be it further enacted, That hereafter, in all appointments of cadets to the Military Academy at West Point, the selections for such appointments in the several districts shall be made from the candidates according to their respective merits and qualifications, to be determined under such rules and regulations as the Secretary of War shall from time to time prescribe.

This, Mr. President, is substantially the proposition which I offered at the last session; and although I was not so fortunate as to obtain for it the assent of the Senate, mainly from an apprehension of practical difficulties in carrying out what is admitted to be a desirable reform if it could be effected, yet the general expression of Senators was so much in favor of the principle, and I have been so much strengthened in my views on the subject by subsequent reflection and examination, that I am emboldened to renew it.

I differ entirely from those who are fond of disparaging the Military Academy. It has been of incalculable service to the country; it is the origin and the constant supply of that military science without which mere courage would be constantly foiled, and battles would be but Indian fights on a large scale. Not to speak of the Mexican war, throughout the whole of which West Point shone with conspicuous luster, it is safe to leave the vindication of the Academy to the gallant and able men who have illustrated the annals of the war that is now raging. Nor have its indirect advantages been less marked than its direct. It has kept alive a military spirit, and kept up a good standard of military instruction in the volunteer militia. It furnished, from its graduates who have retired from the Army, scores of men who rushed to the head of our new levies, who organized and instructed them, inspired them with confidence, and led them over many a bloody field to many a glorious victory. Large numbers of our best volunteer officers owe their instruction indirectly to West Point.

To say that no course of military instruction can make a pupil a military genius, can create in him that rare quality that takes in at a glance, almost by intuition, the relative strength of great masses opposed to each other, and that power of combination which can bring an inferior force always in greater number upon the severed portions of a superior force, is very true. To discard military education on that account would be like shutting up the schools and colleges because they can not turn out Miltons and Burkes and Websters. Education does not create, it develops and enlarges and inspires and elevates. It will make the perfect flower, the majestic tree, from the little seed; but it must have the seed. And what I desire is that the Academy at West Point should have the best seed; that its great resources, its careful culture, its scientific appliances, should not be wasted on second-rate material. The Academy has never had a fair chance: the country has not had a fair chance; the boys have

the country. I desire that the Academy shall begin, as it goes on, upon the not had a fair chance. This is what I want them all to have, and especially competitive principle. As all its standing, all its honors, are won by competition, so should the original right to compete for them be won. I would give all the youth of the country a fair chance; and, more desirable than that, I would give the country a fair chance for all its youth. I would have the Academy filled up by those young men who, upon examination by competent judges, should be found most likely to render the best service to the country; to make the best officers; whose qualifications, physical, intellectual, and moral, whose tastes and habits, should seem to best fit them for military life.

But, it is objected, no such examination would be infallible. Of course it would not be. No human judgment is infallible. Our deliberations are not infallible; but therefore shall we not deliberate? The decisions of the Supreme Court are not infallible; therefore shall we abolish the court?

A SENATOR. The Senator from New Hampshire would say yes.

MR. ANTHONY. I know the Senator from New Hampshire [Mr. HALE] would say "Yes." He would abolish both the Academy and the Court, and I can well suppose that the policy which would abolish the one might abolish the other. But although such an examination would not be infallible, it would, if properly organized and properly conducted, accomplish much toward the reform which all admit to be desirable, if it be practicable. It can not be doubted that the young men who would come out best from such a trial would, as a body, be superior to those who are selected upon mere personal preferences, and these preferences generally not for themselves, but for their parents; not for their own qualifications, but as a recognition of the political services of their fathers.

But, again, it was objected when I made this proposition a year ago that it was not equal; because, in giving to any given place of examination, some young men would have further to travel than others! If this objection had not been gravely made by men for whom I have the highest respect I should be tempted to call it puerile. A boy asks the privilege of going a hundred miles to the place of examination, and is told that he can not have it because another boy will have to go two hundred miles, and another but fifty, and it is not equal! The fact that either of them would go five hundred miles on foot for the opportunity of competition is not taken into the account. On the same principle our elections are not equal, for one man must travel further than another to reach the polls. For a boy who can not obtain the means to travel from his home to the place of examination—and there will be very few such of those who would be likely to pass high in the examination—the plan proposed would be no worse, certainly, than the present system; for those who have the means the difference in travel is too small an item to enter into the account.

No plan can be made perfectly equal. Shall we therefore refuse to make a large advance toward equality? Certainly the system which invites a competition from all who are in a condition to avail themselves of it is more equal than that which excludes all competition. But although equality in the advantages of the Academy is very desirable, and although the amendment proposed would be a long step in that direction, it is not for that reason that I urge it. It is not to give all the young men an equal chance for the Academy, it is to give the Academy a chance for the best young men; and although even under this system the best young men will often fail of success, it can not be doubted that many more of them will enter the service than under the present system.

Nor will the advantages of this competition be confined to those who reach the prize for which so many will struggle. An incalculable although an incidental benefit will accrue to the thousands whose youthful hearts will be stirred by an honorable ambition, and who will cultivate their minds by liberal studies and develop their physical power by manly exercises in the struggle upon which the humblest may enter, and in which the proudest can obtain only what he fairly earns. Under the present system the Academy wastes full half its strength upon boys who never ought to be admitted, and whose natural incapacity derives but little benefit from the partial training that they receive there. Under the system proposed, the Academy would exert its influence upon thousands of the brightest and most aspiring boys all over the country, stimulating them to the pursuit of such studies and to the formation of such habits as, if they fail to carry them to West Point, will help to conduct them to usefulness and honor in whatever path of life they may choose.

But, again, we are met with the objection that this proposition is impracticable, that it looks very well on paper, but that it can not be carried into effect. Let us see. It is quite safe to conclude that what has been done can be done, and that what wise and judicious people do, and persist in doing after experiment, is proper to be done. What is the most warlike nation of Europe? What nation of Europe has carried military science to the highest degree? What nation of Europe has the greatest genius for organization? You will say the French. Let us see what is their system. I read from the report of the Commission appointed by Congress in 1860 to visit the Military Academy at West Point, and report upon the system of instruction; a commission of which you, Mr. President, [Mr. Foor,] were a member:

Among the European systems of military education that of France is preëminent. The stimulating principle of competition extends throughout the whole system; it exists in the appointment of the student, in his progress through the preliminary schools, in his transfer to the higher schools, in his promotion to the Army, and in his advancement in his subsequent career. The distinguishing features of the French system are thus described by the British commissioners.

"1. The proportion, founded apparently upon principle, which officers educated in military schools are made to bear to those promoted for service from the ranks. 2. The mature age at which military education begins. 3. The system of thorough competition on which it is founded. 4. The extensive State assistance afforded to successful candidates for entrance into military schools whenever their circumstances require it. * * * * *

Admission to the military schools of France can only be gained through a public competitive examination by those who have received the degree of bachelor of science from the lycées or public schools, and from the orphan school of La Flèche.

A powerful influence has thus been exercised upon the character of education in France. The importance of certain studies has been gradually reduced, while those of a scientific character, entering more directly into the pursuits of life, have been constantly elevated.

The two great elementary military schools are the School of St. Cyr and the Polytechnic School. These, as well as the other military schools, are under the charge of the Minister of War, with whom the authorities of the schools are in direct communication. Commissions in the infantry, cavalry, and marines can only be obtained by service in the ranks of the army, or by passing successfully through the School of St. Cyr, admission to which is gained by the competitive examination already referred to."

Again, the Commission say, speaking of the School of St. Cyr:

The admission is by competitive examination, open to all youths, French by birth or by naturalization, who, on the 1st of January preceding their candidature

were not less than sixteen and not more than twenty years old. To this examination are also admitted soldiers in the ranks between twenty and twenty-five years, who, at the date of its commencement, have been actually in service in their regiments for two years.

A board of examiners passes through France once every year, and examines all who present themselves having the prescribed qualifications.

A list of such candidates as are found eligible for admission to St. Cyr is submitted to the Minister of War. The number of vacancies has already been determined, and the candidates admitted are taken in the order of merit.

Twenty-seven, or sometimes a greater number, are annually, at the close of their second year of study, placed in competition with twenty-five candidates from the second lieutenants belonging to the army, if so many are forthcoming, for admission to the Staff-School at Paris. This advantage is one object which serves as a stimulus to exertion, the permission being given according to rank in the classification by order of merit.

In regard to the Polytechnic School, the Commission say:

Admission to the School is, and has been since its first commencement in 1794, obtained by competition in a general examination, held yearly, and open to all. Every French youth between the ages of sixteen and twenty (or if the army up to the age of twenty-five) may offer himself as a candidate.

This is the system which was organized by Carnot and adopted and extended by Napoleon. Under this system the French army has attained its perfect organization, its high discipline, its science, its dash, and its efficiency.

But not the French alone have adopted the competitive system. In England, all whose traditions are aristocratical, where promotion in the army has so long been made by patronage and by purchase, the sturdy common sense of the nation has pushed away the obstructions that have blocked up the avenues to the army, and have opened them to merit, come from what quarter it may. In the commencement of the Crimean war, the English people were shocked at the evident inferiority of their army to the French. Their officers did not know how to take care of their men, or how to fight them. And although in the end British pluck and British persistence vindicated themselves, as they always have and always will, it was not till thousands of lives had been sacrificed that might have been saved under a better system. No French officer would have permitted that memorable charge at Balaklava, which was as remarkable for the stupidity that ordered it as for the valor that executed it, and which has been sung in verses nearly as bad as the generalship which they celebrate. After the war, the English Government, with the practical good sense which usually distinguishes it, came, without difficulty, to the conclusion that merit was better than family in officering the army, and that it was more desirable to put its epaulets upon the shoulder of those who could take care of the men and lead them properly than upon those who could trace their descent to the Conqueror, or whose uncles could return members of Parliament. Accordingly, the Royal Military Academy, which had been filled, as ours is, by patronage, was thrown open to public competition. On this subject I quote from the very interesting and valuable report of the Visitors of the Military Academy in 1863:

The same principle was applied to appointments and promotion in the new regiments called for by the exigencies of the great war in which England found herself engaged.

Subjects, time, and place of examination were officially made known throughout the kingdom, and commissions to conduct the examinations were appointed, composed of men of good common sense, military officers, and eminent practical teachers and educators. The results, as stated in a debate in Parliament five years later, on extending this principle to all public schools, and all appoint-

ments and promotions in every department of the public service, were as follows: in the competitive examinations for admission to the Royal Military Academy candidates from all classes of society appeared—sons of merchants, attorneys, clergymen, mechanics, and noblemen, and among the successful competitors every class was represented. Among the number was the son of a mechanic in the arsenal at Woolwich, and the son of an earl who was at that time a cabinet minister—the graduates of national schools, and the students of Eton, and other great public schools.

On this point Mr. Edward Chadwick, in a report before the National Social Science Association, at Cambridge in 1862, says:

"Out of an average three hundred patronage-appointed cadets at the Royal Military Academy at Woolwich, for officers of engineers and the artillery, during the five years preceding the adoption of the principle of open competition for admission to the Academy, there were fifty who were, after long and indulgent trial and with a due regard to influential parents and patrons, dismissed for hopeless incapacity for the service of those scientific corps. During the five subsequent years, which have been years of the open-competition principle, there has not been one dismissed for incapacity. Moreover, the general standard of capacity has been advanced. An eminent professor of this university, who has taught as well under the patronage as under the competitive system at that Academy, declares that the quality of mind of the average of the cadets has been improved by the competition, so much so that he considers that the present average quality of the mind of cadets there, though the sorts of attainment are different, has been brought up to the average of the first-class men of this (Cambridge) university, which of itself is a great gain. Another result, the opposite to that which was confidently predicted by the opponents to the principle, has been that the average physical power or bodily strength, instead of being diminished, is advanced beyond the average of their predecessors."

I read this also from the same report:

Another result of immense importance to the educational interests of Great Britain has followed the introduction of these open competitive examinations for appointments to the military and naval schools, to the East India service, as well as to fill vacancies in the principal clerkships in the war, admiralty, ordnance, and home departments of the Government. A stimulus of the most healthy and powerful kind, worth more than millions of pecuniary endowment, has been given to all the great schools of the country, including the universities of England, Scotland, and Ireland. As soon as it was known that candidates, graduates of Trinity College, Dublin, had succeeded over competitors from Oxford and Elinburg in obtaining valuable appointments in the East India service, the professors in the latter universities began to look to their laurels. As soon as it was known to the master of any important school that some of his leading pupils might compete in these examinations, and that his own reputation as a teacher depended in a measure on the success or failure of these pupils, he had a new motive to impart the most vigorous and thorough training.

Such has been the result in France and in England. We are not without examples at home. The competitive system has been tried in repeated instances here in the appointments both to the Military and the Naval Academy. Several Representatives in Congress, with a conscientious sense of the responsibility resting upon them, have given their patronage to the result of general competition, among them the gentleman who so ably represented, in the last Congress, the district in which I live. The results have been most satisfactory. Here, again, I will quote from the report of the Board of Visitors for 1863:

The principle itself, of selection by merit, either in the mode of public examination or of careful and searching inquiry by competent and impartial educators designated for this purpose by the parties to whom custom, and not law, had assigned the grave responsibility of nominating candidates, has been voluntarily applied in several Congressional districts. Not a cadet known to have been thus selected and appointed has ever broken down from want of vigor of body or mind, or failed to reach and maintain an honorable position on the merit-roll

of the Academy; and to this careful selection by those who felt the responsibility of the privilege accorded to them is the country indebted for its most eminent and useful officers.

The same report makes some observations on another point:

To the objection that selection by public competitive examination will involve expense, we reply that any expense which will do away with the prejudices against the Academy, which the present system of patronage has done so much directly and indirectly to evoke and foster, and which will, at the same time, exclude incompetent and secure the services of vigorous, talented, well-trained officers for every arm of the service, will be well incurred. But in our opinion there will be no more expense in selecting and educating a given number of cadets on this plan than on the present. The two thousand cadets who were appointed by patronage and failed to graduate, cost the Government, directly and indirectly, each year a much larger sum than it would have taken to have excluded them in advance from the institution by competitive examination and filling their places by better men; and their exclusion by substituting better material would have been an incalculable gain to the Academy, facilitating its discipline, increasing the value of its instruction, and giving to the Army a larger number of competent officers.

Even under the despotic government of Austria the competitive system has been adopted for the higher places, and it has been adopted by Prussia and Italy. In Austria every subject can claim admission into the military schools on payment of the cost of his instruction; and all the appointments to the staff are on the competitive system. On this subject I read from the work upon Military Education and Schools, by Hon. Henry Barnard, who stands in the very front rank of the great educators, and who gives to the competitive system the weight of a name which alone should incline us strongly in its favor:

The yearly examinations, the manner in which the marks of the monthly examinations tell on the final one, and the careful classification of the pupils in the order of merit, reminded us of the system of the Polytechnic more than any other school we have seen. * * *

The arrangements for the general staff-school require more remark.

In our report upon Austrian schools we have specially noticed this school as remarkable for its thorough and open competitive character from first to last, and its very sensible plan of study. Admission to it is by competition, open to officers of all arms. The pupils are not unduly overburdened with work; perhaps there is even room for one or two more subjects of importance; but what is done seems to be done thoroughly. The officers are carefully ranked on leaving the school, according as the abilities they have displayed may be considered a criterion of their fitness for employment on the general staff; and in this order they enter the staff corps. The consequence is that every officer knows distinctly, from the time that he first competes for admission until his final examination on leaving, that the order in which he will enter the staff depends entirely on his own exertions and success at the school. It seemed to us that this open competition produced a spirit of confidence and energy in the students as great, if not greater, than any we met with elsewhere.

I quote from the same work in regard to the military education in Sardinia:

Admission into the artillery and engineer school may be considered the reward of the most distinguished pupils of the *Accademia Militare*, who, after spending their last year in that institution in the study of the higher mathematics, chemistry, and architectural drawing, are transferred for the completion of their education to the school of the artillery and engineers.

The staff-school, the formation of which dates from 1850, is chiefly frequented by officers of the infantry and cavalry, who must be below the age of twenty-eight years upon their entrance. It is carried on upon the competitive final examination, the ablest entering the staff corps in that order.

In the same work Mr. Barnard characterizes the Staff-School at Vienna:

The most striking features in the system of this school, both at the entrance

and throughout the course, are, that it is distinctly competitive, that it admits very young officers, and that while the work is considerable, the subjects for study are not numerous. In these three points it differs considerably from the Prussian staff-school, in which the students are generally older, and the principle of competition is not so fully carried out. In the Austrian school the students are placed, on entering, in the order which their entrance examination has just fixed. They are examined once a month during their stay. On leaving the school their respective places are again determined, and they have a claim for appointments in the staff corps in the exact order in which they were placed on leaving the school. In Belgium the competitive system is fully adopted.

The following testimony is from a report on the progress of the principle of competitive examination for admission into the public service, read before Section F. Economic Science and Statistics of the British Association for the Advancement of Science, at Leeds, September 27, 1858, by Edward Chadwick:

Mr. Canon Mosely attests that the "qualifications of the whole" body of competitive candidates appeared to rise above the general "level of the education of the country." It is stated in evidence before the commissioners for inquiring into the means of improving the sanitary condition of the army, that this was most decidedly so of the whole body of competing candidates for medical appointments in the East India service. Mr. Canon Mosely concludes his report on the last year's experience in the following terms: "With reference to the general scope and tendency of competitive examinations, I may perhaps be permitted the observation, that the consciousness which success in such examinations brings with it in early life of a power to act resolutely on a determinate plan, and to achieve a difficult success, contributes more than the consciousness of talent to the formation of a manly and honorable character, and to success on whatever career a man may enter."

The report of the last Board of Visitors at West Point, from which I have read, I believe has not yet been printed by Congress; I have read from a pamphlet copy of it printed in the Journal of Education. The Board was composed, as it usually is, of men of high character and ability. After a full and laborious examination of the whole subject, they unanimously and earnestly recommend the adoption of the competitive system.

If the appointments to fill and maintain the corps at this maximum [four hundred] can be selected out of the many American youths ambitious to serve their country in the Army, on the plan of an open competitive examination in the several States, the Visitors believe that ninety out of every one hundred thus appointed will go through the whole course with honor, and the average ability, scholarship, and good conduct of the whole corps will equal that now reached by the first ten of each class.

With such experience of other nations, with such examples at home, I submit that we may safely in this republican country give our young men the privileges that are conceded in imperial France and in aristocratic England; that we may safely place competition against patronage, and give to modest merit a chance with pretentious imbecility. I would go somewhat further in the competitive system. I would not have the Army or the Navy officered exclusively by the graduates of the national Academies. If any young man, at his own expense, and by his own study and aptitude for the profession, has fitted himself for a command in either, let the competition be open to him equally with those who have been instructed at the public expense, and let the epaulets rest on the shoulders that are most worthy to wear them. But I do not propose to follow the subject to this extent at present. I shall be abundantly content if the Senate will adopt the competitive system, which has worked so well in other countries and so well here as far as it has been tried, in the Military Academy

TABLE VIII.—SUMMARY OF EXAMINATIONS FOR ADMISSION TO THE UNITED STATES MILITARY ACADEMY FOR FIFTEEN YEARS, FROM 1866 TO 1870, INCLUSIVE.

[illegible]

[illegible]

TABLE VIII.—Continued.—SUMMARY OF EXAMINATIONS FOR ADMISSION TO THE UNITED STATES MILITARY AND NAVAL ACADEMIES DURING THE YEAR 1871.

	U. S. MILITARY ACADEMY.										U. S. NAVAL ACADEMY.									
	REJECTED.					REJECTED.					REJECTED.					REJECTED.				
	On what account.					On what account.					On what account.					On what account.				
	For deficiency in—					For deficiency in—					For deficiency in—					For deficiency in—				
	No.	Physical disability.	Reading.	Writing and orthography.	Arithmetic.	No.	Physical disability.	Reading.	Writing and orthography.	Arithmetic.	No.	Physical disability.	Reading.	Writing and orthography.	Arithmetic.	No.	Physical disability.	Reading.	Writing and orthography.	Arithmetic.
STATES AND TERRITORIES.	Candidates.	Accepted total.	Total.			Candidates.	Accepted total.	Total.			Candidates.	Accepted total.	Total.			Candidates.	Accepted total.	Total.		
Alabama.....	1	1	1			1	1	1			1	1	1			1	1	1		
Arkansas.....	1	1	1			1	1	1			1	1	1			1	1	1		
California.....	1	1	1			1	1	1			1	1	1			1	1	1		
Connecticut.....	1	1	1			1	1	1			1	1	1			1	1	1		
Delaware.....	1	1	1			1	1	1			1	1	1			1	1	1		
Florida.....	1	1	1			1	1	1			1	1	1			1	1	1		
Georgia.....	1	1	1			1	1	1			1	1	1			1	1	1		
Illinois.....	1	1	1			1	1	1			1	1	1			1	1	1		
Indiana.....	1	1	1			1	1	1			1	1	1			1	1	1		
Iowa.....	1	1	1			1	1	1			1	1	1			1	1	1		
Kansas.....	1	1	1			1	1	1			1	1	1			1	1	1		
Kentucky.....	1	1	1			1	1	1			1	1	1			1	1	1		
Louisiana.....	1	1	1			1	1	1			1	1	1			1	1	1		

ARTILLERY SCHOOL AT FORTRESS MONROE.

HISTORICAL NOTICE.

The Artillery School of the United States Army at Fortress Monroe, was organized and opened April 1, 1868, under a code of regulations and programme of instruction drawn up by Col. William F. Barry (who was placed in command from the start), and approved by the General of the Army. After two years of experience the code and programme were revised, and the present system established. The class of 1868 and of 1869, consisted, each, of twenty lieutenants of artillery, and of the whole number, thirty-eight were sent back to their regiments after having passed a satisfactory examination. To this number at the close of the school year (April) 1871, sixteen more out of the class of twenty were found qualified to return to their respective regiments; twenty more are now in the progress of instruction, constituting together one-half of all the officers of that grade belonging to the artillery.

COURSE OF INSTRUCTION.*

The course of theoretical instruction embraces the subjects of mathematics, ordnance, and gunnery, military engineering and surveying, military history, and military, constitutional, and international law. The method of pursuing these studies is very similar to that pursued at the Military Academy at West Point, viz., by recitations, questions, and demonstrations at the blackboard. In military history each officer is required, in addition to his regular recitations, to prepare and read before the class and staff of the school two essays or memoirs upon some battle, campaign, or the military events of some epoch of peculiar interest.

The topics for these essays are selected by the instructor in military history, with the approval of the commandant and superintendent of instruction, and are generally confined to events not prior to the last two decades of the eighteenth century.

The necessary maps, instruments, and apparatus for the elucidation

* Report of Col. Barry, dated September 12, 1871.

tion or practical application of the various subjects of the entire range of the theoretical course have to a considerable extent been supplied to the school by requisitions upon the Engineer and Ordnance Departments of the Army. They are kept in active use, and are of the greatest value.

Instructions in the theoretical course is confined to the months of autumn, winter, and the early spring, except instruction in mathematics, which unavoidably has to be given during the months of May, June, July, and August.

The course of practical instruction is pursued, as the weather permits, throughout the entire year, but is more closely attended to during the months of summer and autumn. This course consists of the service of every species of gun, howitzer, or mortar in use in the United States military service; of the use of the various kinds of projectiles and fuses; the laying of platforms; the use of plane-tables, and telemeters, for ascertaining ranges; of mechanical manœuvres; transportation and other handling of all kinds of ordnance, and particularly of the 15-inch guns and their carriages, and of 13-inch mortars and their beds, and of other heavy material which has been adopted into the artillery of the United States.

The practical course also includes very full target practice with every description of ordnance; the duties of the laboratory, as far as they immediately concern officers of artillery; and the study of and recitation in the tactics for light and heavy artillery, and as much of the tactics for infantry as is essential for artillery officers.

Guns, carriages, ammunition, platforms, artillery machines, including hydraulic-jacks of greater or less power, and other appliances, are supplied by requisition on the Ordnance Department in such number and variety as may be desired. The school is compelled to be indebted to the Ordnance Department for the occasional use, when necessary, of some of its instruments and apparatus for determining initial velocities, pressures, densities, etc.

Instruction in the practical course is designed to be as thorough as possible, and no officer leaves the school who has not become practically familiar with the tools of his trade, and able to use them intelligently.

A school for non-commissioned officers, and for such other enlisted men as may desire to avail themselves of its advantages, is also established. Every non-commissioned officer belonging to the five instruction batteries is required to attend the school for one year's full course of instruction; all other enlisted men are permitted to attend. But their attendance upon school is entirely voluntary.

Enlisted men of good character, and belonging to batteries not stationed at the post where the Artillery School is established, are also permitted to enjoy the benefits of one year's course of instruction at the school. Such men, on their own application, are nominated by their battery commanders to their regimental commanders, on whose approval they are detached from their batteries, by orders from the head-quarters of the Army, and directed to report themselves in person to the commanding officer of the school. Of this last-named class of men twenty-two have undergone or are now undergoing instruction at the school.

The course of instruction for the non-commissioned officers is both practical and theoretical. The practical course is pursued *pari passu* with that of the commissioned officers, but is not carried to the same extent, being restricted to the scope of the necessary duties and requirements of non-commissioned officers of artillery, and to the average capacity of enlisted men of that grade in our Army.

The theoretical course of instruction for the non-commissioned officers embraces mathematics, history of the United States, geography, reading, and writing. The subject of mathematics includes the entire field of arithmetic, and, for the more advanced scholars, it is carried as far as equations of the second degree in algebra. The instruction in most of the branches is conducted as in the school for commissioned officers, by recitations at the blackboard, and by questions.

Since the commencement of the duties of the Artillery School one hundred and three enlisted men (chiefly non-commissioned officers) have gone through the entire course of practical and theoretical instruction for one year, and have been awarded by the staff of the school engraved certificates, signed by each of its members, setting forth that fact.

The following-named officers constitute the staff and instructors at the school at the present date, and, with the above-stated exceptions, have been thus on duty since its first establishment:

Commandant.—Colonel W. F. Barry, Second Artillery.

Superintendent of Theoretical Instruction.—Lieutenant-Colonel I. Roberts, Fourth Artillery.

Superintendent of Practical Instruction.—Major G. A. De Russy, Third Artillery.

Member of Staff.—Major T. G. Baylor, Ordnance Department.

Adjutant of School and Secretary of Staff.—First Lieutenant I. C. Breckinridge, Second Artillery.

Instructor in Mathematics, Ordnance, and Gunnery.—Captain R. Lodor, Fourth Artillery.

Instructor in Military, International, and Constitutional Law, and in Tactics.—Captain S. S. Elder, First Artillery.

Instructor in Mathematics and Military Engineering.—Captain S. N. Benjamin, Second Artillery.

Instructor in Mathematics and Military History.—Captain E. R. Warner, Third Artillery.

Instructor in Tactics.—Captain J. W. Piper, Fifth Artillery.

A library of books of reference, professional instruction and general reading, to the number of 2,050 volumes, belongs to the school, made up of duplicates from the libraries of the War Department and the Military Academy, and a bequest of Col. Archer.

A museum of field, siege, and sea-coast artillery; specimens of primers, fuses, and projectiles; different varieties of small arms of this and other countries; instruments for inspecting cannon and projectiles, has been commenced by the Superintendent, as a useful aid to the course of practical and theoretical instruction in the school. It now numbers over 4,000 articles.

The Artillery School has been organized and conducted thus far to the satisfaction of the Department, and favor, with this arm of the service, without any special pecuniary expense to the Government by the present Commandant, Col. William F. Barry—who closes his annual Report with the remarkable paragraph:—"No special appropriation (beyond the ordinary requirements of this Military Post) for the maintenance of this school are now needed, and none are required."

VIRGINIA MILITARY INSTITUTE AT LEXINGTON.

HISTORICAL NOTICE

THE VIRGINIA MILITARY INSTITUTE at Lexington, was established in 1839, and was organized and conducted from the start on the plan of the Military Academy at West Point, by Col. Francis H. Smith, a graduate of that institution of the class of 1833, and professor there from 1834 to 1836.

The State makes an annual appropriation of \$15,000 for its support, on the basis of which a certain number (usually 36) cadets are admitted without charge; in consideration of which they are required to teach in some school of the State for two years after graduation. In the selection of State cadets regard is had to their capacity to profit, and inability to pay the expenses of tuition and board, and an equal representation of each senatorial district. Any commissioned officer of the militia of the State can become a student for a period not exceeding ten months, and receive instruction in any or all departments of military science taught therein, without charge for tuition.

The course of instruction was from the start distinctly scientific, and since its return [from Richmond where it was removed after the destruction of its building and library, when Lexington was taken possession of by Gen. Hunter] in 1866, and its reorganization on its present basis of a general School of Applied Science, it has become even technic in reference to all the chief industries and natural resources of Virginia.

The origin and military character of the Institute are thus set forth by the Superintendent in an address to the Corps of Cadets, Sept. 10, 1866:

Peculiar circumstances gave to this Institution its distinctive military character. Here the State had a deposit of arms, in an arsenal, which had been established for many years before the organization of the Institution, and the annuity which had been formerly given to the public guard by the State, was transferred to the Virginia Military Institute, as the basis of its support. Upon this foundation the Virginia Military Institute was established, and as the duty imposed upon the cadet was military, so military discipline and military instruction became an essential and distinctive feature in the education it supplied. Besides daily exercises in the school of the soldier, company, and battalion in *infantry*, and of the piece and battery in *artillery* tactics, minute instruction in

given in the class-room, upon all the theoretic branches of the military art, embracing, in addition to those enumerated, *ordnance and gunnery, military strategy and military history*, and the principles and practice of field and permanent fortifications.

It is not necessary that I should say any thing, at this time, to vindicate the completeness of the arrangements made in this institution for theoretical and practical military education. The sanguinary conflict which has just closed has fully tested its efficiency. *One-tenth of the Confederate Armies was commanded by the élèves of this school, embracing three major generals; thirty brigadier generals, sixty colonels, fifty lieutenant colonels, thirty majors, one hundred and twenty-five captains, between two and three hundred lieutenants; and the terrible results of the battles, in numbering one hundred and twenty-five of these among the killed, and three hundred and fifty among the wounded, show that the élèves of this institution met the call of their country with an earnestness of devotion which places them in most honorable distinction for their heroic defense of what they believed to be right.**

We give the organization and course of instruction from the latest Circular, issued by the Superintendent.

Academic Staff.

Superintendent, and Professor of Mathematics and Moral Philosophy—General Francis H. Smith, A. M.

Professor of Latin; and English Literature—Col. John T. L. Preston, A. M.

Professor of Practical Engineering, Architecture, and Drawing—Col. Thomas H. Williamson.

Professor of Agriculture—Col. Wm. Gilham, A. M., (Philip St. George Cocke).†

Professor of Animal and Vegetable Physiology applied to Agriculture—Col. Robert L. Madison, M. D. (Mercer).‡

Commandant of Cadets, Instructor of Infantry, Cavalry, and Artillery Tactics, and Professor of Military History and Strategy—Col. Scott Ship.

Professor of Mathematics—Col. James W. Massie.

Professor of Natural and Experimental Philosophy—Col. William B. Blair, (Jackson).

Professor of Civil and Military Engineering and Applied Mechanics—General G. W. C. Lee.

Professor of Practical Astronomy, Geology, Descriptive and Physical Geography and Meteorology—Col. John M. Brooke.

Professor of Geology, Mineralogy, and Metallurgy—Col. Marshall McDonald.

Professor of General and Applied Chemistry—Col. M. B. Hardin.

Professor of Modern Languages—Col. Thomas M. Semmes.

Professor of Physics and Superintendent of Physical Survey of Virginia—Commodore M. E. Maury, LL D.

Professor of Fine Arts—Col. William D. Washington.

Assistant Professors.

Assistant in Physics—Col. W. E. Cutshaw.

Assistant Professor of French Language—Capt. O. C. Henderson.

Assistant Prof. of Chemistry, Mineralogy, and Geology—Capt. J. H. Morrison.

Assistant Professor of English, and Drawing—Lieut. James H. Waddell.

Assistant Professor of Latin—Capt. Wm. M. Patton.

Assistant Professor of Mathematics—Lieut. R. H. Cousins.

Assistant Prof. of Geography, Drawing and Tactics—Capt. Wm. B. Pritchard.

* Although no one institution contributed so large a number of officers to the Confederate Armies, the Military Institute at Frankfort, Ky., the Cadet Corps connected with the arsenals in Norfolk, Richmond, and other Southern cities, and the State Military Institutes in Alabama and Louisiana, furnished a large number of subordinate officers, which facilitated the early organization of the armed forces of the South.

† Gen. Cocke, in 1866, gave \$30,000 to endow this professorship.

‡ Dr. Mercer of Louisiana, made a donation of \$11,800 to this chair.

Assistant Professor of Mineralogy, Latin, and Tactics—Capt. W. H. Butler.
Assistant Professor of Natural Philosophy and Latin—Lieut. R. E. Nelson.
Assistant Professor of Mathematics—Lieut. W. C. Powell.
Assistant Professor of Latin—Lieut. James E. Heath.
Assistant Professor of Drawing—Lieut. M. Palmer.
Assistant Professor of Tactics—Capt. W. Denham.
Assistant Professor of Mathematics, &c.,—Capt. G. K. Macon.

Military Staff.

Surgeon—Col. R. L. Madison, | *Act'g Treasurer*—Capt. W. A. Deas.
Ass't Surgeon—H. T. Barton, M.D. | *Com. and Steward*—Capt. J. T. Gibbs.
Adjutant—Capt. F. H. Smith, Jr.

III. SCHOOLS AND COURSES OF INSTRUCTION.

Academic Schools.

First Year—Fourth Class.—Arithmetic (Smith and Duke's); Algebra (Smith's); Geometry (Smith's Legendre); Plane and Spherical Trigonometry (Smith's); French (Lavizac and La Porte's Grammar, Gil Blas, Pinney No. 5, Fasquelle); Geography (Maury); Pencil and Pen Drawing; Composition and Declamation; Latin (Cæsar, Virgil, Cicero, Horace).

Second Year—Third Class.—Descriptive Geometry (Smith's); Analytical Geometry (Smith's Biot); Shades, Shadows and Perspective (Lectures); Differential and Integral Calculus (Courtenay and La Croix); Surveying (Field Exercise); French (Noel and Chapsal, Laporte and Collot, French Classics); Latin (Cæsar, Virgil, Livy, and Cicero); Mechanical Drawing, Composition, and Declamation; Physics (Ganot).

Third Year—Second Class.—Natural Philosophy (Bartlett and Bouchalat's Mechanics, Bartlett's Optics and Acoustics, Bartlett and Gummere's Astronomy); Latin (Terence and Horace); Chemistry (Fownes, and Practical Instruction in Laboratory); Physical Geography (Somerville); Infantry Tactics.

Fourth Year—First Class.—Civil Engineering (Mahan, Rankine, and Lectures); Military Engineering (Laisne, aide memoire); Architecture (Lectures and Drawing); Human Physiology (Kirke); Military History and Strategy (Jomini); Rhetoric (Blair); Intellectual Philosophy (Wayland); Logic (Whately); Moral Philosophy (Paley and Butler); Constitution of United States (Kent); Mineralogy (Dana); Geology (Gray and Adams); Infantry tactics (Hardee); Artillery and Ordnance (Benton and United States Tactics).

Special School of Applied Science.

The Special School of Applied Science, in the Virginia Military Institute, is arranged in seven *Courses*, which may be prosecuted separately or in combination: 1. Architecture; 2. Civil Engineering; 3. Machines; 4. Mining; 5. Analytical and Applied Chemistry; 6. Metallurgy; 7. Agriculture.

I. ARCHITECTURE.—1. *Drawing*—Including pen and colored topography, mechanical lettering and coloring. 2. *Materials*—Stone, brick, wood, mortar, mastics, glue, paints, &c. 3. *Masonry*—Retaining walls, walls of inclosure, edifices, ornaments, arches, stone-cutting. 4. *Carpentry*—Timbers, framing, beams, joints, floors, partitions, roofs, domes, centres, windows, stairways. 5. *Foundations*—In water, on land. 6. *Classical Architecture*—Orders, Egypt, Rome, Greece. 7. *Design*. 8. *Romanesque*. 9. *Gothic*.

II. CIVIL ENGINEERING.—1. *Drawing*—Pen and colored topography, mechanical, etc. 2. *Materials*—Same as in Course of Architecture. 4. *Carpentry*—Same as in Course of Architecture. 5. *Foundation*—Same as in Course of Architecture. 6. *Surveying*—Running lines and curves for common and railroads, canals, leveling profiles, estimates, &c. 7. *Bridges*—Stone, Wooden, Iron. 8. *Common Roads*. 9. *Railroads*. 10. *Tunnels*. 11. *Locomotives*. 12. *Canals*. 13. *Rivers, Docks, Harbors*. 14. *Mining*.

III.—MACHINES—GENERAL PRINCIPLES OF MACHINES.—*Muscular Power*—Power of men, Power of horses, etc. *Water Power and Wind Power*—Sources of water for Power. Water-Power Engines in general. Water-Bucket En-

VIRGINIA MILITARY INSTITUTE AT LEXINGTON.

gines. Water-Pressure Engines. Vertical Water-wheels. Turbines. Fluid-on-Fluid, Impulse-Engines, Windmills. *Steam and other Heat Engines*—Relations of the Phenomena of Heat. Combustion and Fuel. Principles of Thermodynamics. Furnaces and Boilers. Steam-Engines. Electro-Magnetic Engines.

IV.—MINING.—*Course of Lectures on Mining*—Embracing prospecting, breaking ground, boring, blasting, tubing, sinking shafts, driving tunnels, ventilating and lighting; the different methods of working mines; mining machinery and motors, engines, horses, pumps, wagons, drums, etc.; dressing and concentration of Minerals, crushers, stamps, washers, amalgamators, etc.; quarrying and open workings; details of mining in this country and statistics.

Drawing.—Geological maps and sections; coloring the same; and plans and sections of mines, quarries and other open workings; mining machinery and implements; plans of ventilation.

V.—METALLURGY.—*Geology of Coal, Iron, Copper, Lead, Zinc, Salt, etc.*

Metallurgy.—Review of more important metals and their ores; Metallurgical implements, structures, and processes, crucibles, furnaces, blowing machines; details of the smelting and manufacture of Iron, Copper, Lead, Silver, Gold, etc.

Drawing.—Coloring of maps and sections; drawing of furnaces, refiners, blooming ovens; Metallurgical apparatus.

VI.—ANALYTICAL AND APPLIED CHEMISTRY.—In the Laboratory facilities are afforded for prosecuting the various branches of practical Chemistry. Each student will work independently of the others, receiving personal guidance and instruction from the Professors. In the last year the course may be varied according to the special object the student has in view.

The following is an outline of *Systematic Course for Students in Mining and Metallurgy*: 1. Qualitative Analysis. 2. Quantitative Analysis; (a.) Analysis of substances of known composition; (b.) Analysis of ores, slags, etc. 3. Assayers—Ores of Lead, Silver, Gold, Iron, Copper, etc.

VII.—AGRICULTURE.—1. *Chemistry*—General and applied to Agriculture. 2. *Mineralogy*. 3. *Histology*. 4. *Vegetable Physiology*. 5. *Agricultural Botany*. 6. *Zoology*. 7. *Civil Engineering*—Applied to farm bridges, roads, drainage. 8. *Rural Architecture*. 9. *Drawing*. 10. *Anatomy and Physiology of Sub-Kingdom—Vertebrata*. 11. *Human Physiology*. 12. *Hygiene and Dietetics*. 13. *General Botany*. 14. *Animal Toxicology*. 15. *Veterinary Practice*. 16. *General Principles. Chemistry, Geology, Mechanics, and Domestic Economy.*

IV. SYSTEM OF INSTRUCTION AND GOVERNMENT.

The System of Instruction and Government is founded upon that of the United States Military Academy at West Point.

As soon as a young man enters the Institution, it assumes over him an entire control, and not only directs his moral and intellectual education, but provides every thing required for his personal wants or comfort. A Cadet, may, if his parents desire it, remain in charge of the Institution for the entire term of four years, as the system of government keeps it always in operation. The months of July and August, in each year, are devoted exclusively to Military Exercises. Furloughs are granted to those who may desire it, in turn, during this period. The Cadets are lodged and boarded in the Institution, their Clothing, Books, and other supplies, being provided by the Quartermaster of the Institute, *at cost*. The sick are under the special care of the Surgeon, with Hospital and other facilities for nursing.

The energy, system, subordination, and self-reliance which the military government of the Institute cultivates, give a practical character to the education which it supplies. The high reputation which its Alumni have established for the School is the evidence of its value.

V. DEGREES.

A Diploma, signed by the Governor of Virginia and by the Visitors and Faculty, is awarded to all Cadets who may pass approved examinations on all the studies of the Academic School, with the title of "*Graduate of the Virginia Military Institute*." A like Diploma is awarded to all who may complete the course prescribed for either of the *Special Schools of Applied Science*, with the title of "*Graduate*" in such school.

MILITARY TACTICS IN STATE SCHOOLS OF SCIENCE.

INTRODUCTION.

IN the Act of Congress (July, 1862) making grants of public lands to the several States for the endowment of State Schools of Agriculture and the Mechanic Arts, it is provided that military tactics shall be included in their schemes of instruction; and by an Act of March, 1869, the President is authorized to detail an army officer to each institution, to instruct in such tactics. On these two provisions, with further coöperative legislation, State and National, a system of military instruction can be gradually developed, which, for economy, efficiency, and uniformity, will meet all the conditions of a national armament, and compare favorably, as against foreign invasion or domestic insurrection, with that of Switzerland or Prussia. Thus far the subject has received only slight attention, and the connection of these departments with the State militia, or volunteer companies, or the appointment of cadets to our national military schools or to vacancies in the army, has not been discussed. We state briefly what is attempted in a few of these schools:

CORNELL UNIVERSITY AT ITHACA, N. Y.

In Cornell University (to which the United States Land Grant of 989,000 acres of land was assigned by the Legislature of New York, and which Mr. Ezra Cornell has endowed with the sum of \$525,000, securely invested and drawing interest at seven per cent.), the military tactics is incorporated into the general organization of the students, and made the basis of the College of Military Science. (1.) Attendance on military exercises is made obligatory on every able-bodied student; and for this purpose the whole number is organized into a military corps—arms and equipments being furnished by the State—under the Military Professor, who has the title of Commandant, and is aided in his duties by a staff, selected in view of military aptitude, general deportment, and proficiency in studies. (2.) All students are required to observe and conform to such regulations as may, from time to time, be promulgated by the Commandant; provide themselves with the university cap for ordinary wear, and with the blouse or fatigue cap for parade; and are

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held to strict accountability, for the proper use of the arms and other property issued to them. (3.) The practical instruction for all students embraces infantry and artillery tactics, and special exercises with the sabre, sword, and bayonet; and (4.) for those who elect, a military course consisting of (a.) *Military Engineering*, (b.) *the Art of War*, and (c.) *Military Law*. At the close of each year, after the graduating exercises, the Faculty will recommend to the Governor of the State a list (not exceeding one in every ten of such graduates), distinguished for general proficiency in any one of the complete University courses, special attainments in military science, expertness in military exercises, and of good moral character and of sound health, with a request to transmit the same to the President of the United States for his consideration in making appointments for positions in which such qualifications are demanded.

STATE AGRICULTURAL COLLEGE AT AMHERST, MASS.

The Military features of the Course of Study were originally administered by Capt. Henry E. Alvord, of the United States Army, who had been specially charged with this instruction in the Military Institute and University at Norwich, Vt. The specifications are:

FRESHMAN YEAR.—*First Term*—Military Drill; Infantry Tactics; School of the Soldier; *Second Term*—Do.; and School of the Company and Manual of Arms. *Third Term*—Do.; and School of the Company and Battalion.

SOPHOMORE YEAR.—*First Term*—Military Drill; Infantry Tactics; Manual of the Bayonet and Instruction in duty as Skirmishers. *Second Term*—Do.; and Bayonet Exercise. *Third Term*—Do.; and Skirmish and Battalion Drill; Guard Duty; and Forms of Parade and Review.

JUNIOR YEAR.—*Third Term*—Military Drill; Artillery Tactics; School of the Piece. *Second Term*—Do.; and Artillery and Cavalry Tactics; Manual of the Sabre; School of the Trooper dismounted; Instruction in Heavy Artillery Tactics and Gunnery. *Third Term*—Do.; School of the Section; Infantry Tactics; Battalion Drill.

SENIOR YEAR.—*First Term*—Military Drill and Cavalry, Artillery and Infantry Tactics; Duty as Drill Masters and Officers in Infantry and Artillery Drill; Theoretical Instruction in Cavalry Tactics, and the organization and uses of Cavalry. *Second Term*—Military Drill and Cavalry Tactics; Sabre Exercise. *Third Term*—Military Drill; Target Practice; Sword Play; and General Drill.

The Committee of Examination for 1870 report as follows:

Your Committee can not refrain from alluding to the interest which all the young men take in the drills, the evident beneficial effect upon their bearing and health, and the value of the accomplished soldiers and officers thus made for the future service of the Commonwealth, in the event of another call to send forth her sons for herself or the nation. Were no other result accomplished by this institution, the money of the Commonwealth could be no more judiciously expended, and yet this is but an incident to the regular course.

The Principal, Col. Clark, writes: "We have a fine hall for in-door exercise, and are furnished by the State with cannon, breech-loading rifles, sabres, &c., and consider our course a decided success. Our graduates are able to act as officers in infantry and artillery regiments, and I believe our system, as we are organized and taught by a West Point graduate, a most excellent and economical substitute for the ordinary militia system."

LOUISIANA STATE UNIVERSITY.

THE LOUISIANA STATE UNIVERSITY was founded as "a State Seminary of Learning and Military Academy" by the Legislature in 1855, near Alexandria, in the Parish of Rapides, on endowments of land made by the General Government at different times, from 1806 to 1827, for establishing "a Seminary of Learning." It was opened for the reception of students, January 2, 1860, and organized on a military basis, under the superintendence of Col. W. T. Sherman (now General-in-Chief, United States Army), who resigned his position, February 2, 1861, on the hostile demonstration of the State of Louisiana against the authority of the United States. The instruction of the institution continued under Col. W. E. M. Linfield, till April 22, 1863, when its operations were closed by the disasters of the War, to be reopened on the first of October, 1865, only to be closed again by the utter destruction of its extensive buildings by fire on the 15th of October, 1869. On the 1st of November following, its exercises were resumed at Baton Rouge, in the extensive building of the Asylum for the Deaf and Dumb, which was placed temporarily for the occupancy of the classes, and a portion of the students. The session of 1871, under the superintendence of Col. D. F. Boyd, closed with 217 matriculated Cadets, of whom 128 were admitted on the State Cadet warrants.

The Law of March 16, 1870, relative to the appointment of Beneficiary Cadets, provides that each parish shall delegate two, and the city of New Orleans, by its Board of School Directors, twenty cadets, to be selected from the members of the highest class in the public school of such parishes and city, distinguished for their scholarship and good conduct, and whose parents may not be able to provide for their necessary expenses for tuition and maintenance at the State Seminary; and at the expiration of their residence at the University which can not exceed four years, these Beneficiary Cadets are required to teach school within the State for two years, on penalty of default to the amount of the sum paid by the State.

WABASH COLLEGE, CRAWFORDSVILLE, INDIANA.

By arrangement with the Trustees of Wabash College, the Legislature of Indiana has authorized the County Commissioners of each county to appoint one person to receive the advantages of the institution for five years, free of tuition, in consideration of a portion of the State's quota of the United States Land Grant, for agricultural and mechanical Arts Colleges; and to meet the requirements of the law of Congress, the college has established a Scientific Course,

and under the superintendence of a Professor of Military Science, daily instruction in Tactics and Gymnastics is given to the students by divisions with a weekly drill of all, as a battalion. The *College Courant* thus notices the new hall for Gymnastics and Tactics :

The physical culture of this institution is under the charge of the Chair of Military Science, and for the purpose of this culture a building has been erected which is more comprehensive than usual in gymnasiums, and is quite unique in some particulars. Work was commenced last August, and in fifty days the roof was receiving the slate. The building presents the form of a cross, of equal members, and the ground service of seven thousand five hundred feet, is thus divided : A marching and running course, of three hundred feet, twelve feet wide, and seventeen feet high ; a gymnasium sixty feet by twenty-six, and twenty-four feet high, ventilated and lighted by a central tower fifty feet in height ; an armory and gun-room, for care of small arms and artillery ; and a room for fencing, boxing, quoits and other manly exercises. In the four transepts above, are topographical room, model room ; reading room, for maps, charts, etc., and bath rooms. All these, through interior glass fronts, furnish a full view of the Exercise Hall, within and below. The small-arms used, are the "light, cadet, breech-loading rifle," similar to those last issued to the Military Academy at West Point, and were manufactured by the United States at the Springfield Arsenal for the use of students receiving their instruction.

CALIFORNIA STATE UNIVERSITY.

THE UNIVERSITY OF THE STATE OF CALIFORNIA has a Military Department to meet the requirements of the Act of Congress, under the directions (1871) of Professor (General) Welcker and Assistant Professor F. Soule, graduates of the West Point Academy. The Adjutant General (Thos. N. Cazneau) of the State in his Report to the Governor, dated September 1, 1870, remarks :

The gratifying success with which the military department of the State University has been conducted is worthy of special notice, and I am happy to announce that perfect discipline and a high state of proficiency pervade the department of military study at that institution. The cadets were incorporated with the National Guard of the State by Act of the last legislature, and have been formed into four companies of infantry, and instructed most fully and perfectly in that branch of military service. A personal inspection of the battalion enables me to speak of its condition with confidence. I find both officers and cadets thoroughly up to the requirements of the infantry soldier, perfect in carriage, most proficient in the use of arms, steady in marching and all company formations, and, in the manoeuvres of the battalion, challenging an admiration worthy to be elicited by a veteran soldiery. Their *ensemble* is striking, and the effect of a thorough military training upon the young gentlemen of the University is largely manifested in their erect and graceful personal appearance and movements, apparent not only when upon duty but in their ordinary walks of every-day occupation ; while the gentlemanly and high-toned courtesy that pervades the whole body may not unjustly be attributed, in a large degree, to their military studies and military habits. The young officers evince excellent characteristics of command, great dignity of deportment and admirable ability in imparting instruction. I can not too highly commend to your attention the whole military condition of the cadets of the State University, and to ask for them your fostering care and encouragement, and that of the Legislature.

There are several colleges in California in which military instruction is introduced ; prominent among them is St. Augustine College at Benicia, and McClure's Academy at Oakland. At each there are about 100 boys, fully equipped and drilled as infantry soldiers.

INDIVIDUAL AND CORPORATE INSTITUTIONS

FOR

MILITARY INSTRUCTION.

ALDEN PARTRIDGE.

ALDEN PARTRIDGE, Captain in the United States Corps of Engineers, Professor and Superintendent of the Military Academy at West Point, and the Founder of a class of institutions in which the military element is recognized and provided for as an essential part of the training of the American citizen, was born at Norwich in Vermont, on the 12th of January, 1785. His father was a farmer, in independent circumstances, served in the war of the Revolution, and took part in the capture of Burgoyne and his army at Saratoga. He brought up his son in the New England fashion, at such district school as the times and the country afforded in the winter, and at all sorts of work about the house and on the farm at other seasons, until he was sixteen years of age, when, being of studious turn, and fond of reading, he was allowed to fit for college, and entered Dartmouth in August, 1802. We have no knowledge of his studies in college, but it is presumed that his predilections were for the mathematics, and from the lateness with which he commenced his Latin and his subsequent declarations, his aversion was for the languages. Before completing his collegiate course he received the appointment of cadet* in the regiment of artillery in the United States service, with orders to repair to West Point, and report himself to the commanding officer of the Military Academy at that place.

The Military Academy at the time Cadet Partridge arrived at West Point was very inadequately equipped with the men and material aids of instruction, although the two teachers appointed

* A Cadet in the military organization of the Army denoted a junior officer between the grade of lieutenant and sergeant, and was introduced from the French service. An Act of Congress, passed May 7th, 1794, provided for a Corps of Artillerists and Engineers, to consist of four battalions, to each of which eight cadets were to be attached, and authorized the Secretary of War to procure at the public expense the necessary books, instruments and apparatus for the use and benefit of said corps. In 1798, an additional regiment of Artillerists and Engineers was raised, increasing the number of Cadets to fifty-six. In 1798, the President was authorized to appoint four teachers of the Arts and Sciences necessary to Artillerists and Engineers. No appointment was made till 1801, and in 1802, the Military Academy was established at West Point, where the corps of Engineers was directed to repair with fifty Cadets, and the Senior Officer of the Corps was constituted Superintendent. Col. Williams was then Senior Officer of Engineers, and became, *ex-officio*, Superintendent, and continued such until 1812.

were abundantly capable in their respective departments. Jared Mansfield, especially, the teacher of natural philosophy, had won such reputation in mathematical studies that he received his commission as a captain of engineers from Mr. Jefferson for the very purpose of becoming a teacher at West Point, which he did by appointment in 1802, although in reality he did not perform his duties regularly, and then only for one year, having been, in 1808, appointed by President Jefferson to the responsible post of Surveyor-General of the North-western territory. Such instruction as was given was received by Cadet Partridge in 1806, and in July of that year, he was transferred to the Corps of Engineers, and in October, commissioned as first lieutenant. In November, 1806, he was appointed assistant professor of mathematics, Ferdinand R. Hassler, a little later, having been made Professor in place of Capt. Barron, retired. From Prof. Hassler, he received great help in his mathematical studies, as he afterwards repeatedly acknowledged. In 1808, Prof. Partridge was called to act in place of the Superintendent in the absence of Col. Williams, and continued to do so, with brief intervals, until January, 1815, when he was appointed to the office which he filled till March, 1816. In 1809, Mr. Hassler resigned the professorship of mathematics, and the instruction before given by him devolved on his assistant, Mr. Partridge. In 1810, he succeeded, after repeated applications to the Secretary of War, in obtaining two field pieces, for practical instruction of the Cadets as Artillerists.

In 1812, the Academy was re-organized, and was made to consist of the Corps of Engineers and the following Professors, in addition to the teachers of the French language and drawing, viz.: "one professor of natural and experimental philosophy; one professor of mathematics; and one professor of the art of engineering; each professor to have an assistant taken from the most prominent of the Officers or Cadets." The number of Cadets was increased to two hundred and fifty, and were directed to be arranged into companies of non-commissioned officers and privates, according to the directions of the commandant of Engineers, and be officered from that corps, "for the purposes of military instruction, in all the duties of a private, non-commissioned officer, and officer, and to be encamped at least three months of each year, and taught all the duties incident to a regular camp." The age of admission was fixed, the minimum at fourteen, and maximum at twenty-one, and preliminary knowledge to be well versed in reading, writing, and arithmetic. It was further provided that any Cadet who shall receive a regular degree from the Academical Staff, after going through all the classes,

shall be considered among the candidates for a commission in any corps, according to the duties he may be judged competent to perform. The sum of \$25,000 was appropriated towards the buildings, library, implements, &c. On this broad basis the Academy was progressively enlarged to its present capabilities of usefulness.

Under the new arrangement of 1812, Mr. Partridge was appointed professor of mathematics, with the pay and emoluments of a major, which appointment was soon after, at the request of the Secretary of War, exchanged for that of professor of engineering, it being found more difficult to fill the latter post than the former. The duties of this professorship he continued to discharge from September 1, 1813, till December 31, 1816.

In 1808, Capt. Partridge was ordered by Col. Williams to take charge of the internal direction and control of the Military Academy as Superintendent, which duties he discharged until January 3, 1815, when, by regulations of that date, he was made the permanent Superintendent, which post he held till November 25th, 1816, and was finally relieved on the 13th of January, 1817.

By the regulation of January 3, 1815, the commandant of the Corps of Engineers was constituted *Inspector* of the Academy, and made responsible for instruction, and to report to the Department of War. Out of this appointment, and the instructions relating thereto, grew a difference of opinion, which resulted in the final withdrawal of Capt. Partridge from the institution, the resignation of his commission in the military service of the United States, and his subsequent devotion to the dissemination by lectures and personal efforts of the views which he had formed of the education required by the American citizen, and the establishment of institutions in which these views could be carried out.

After resigning his commission in the military service of the United States, Capt. Partridge was engaged, in the summer of 1818, as military instructor to a volunteer corps, and in giving a course of lectures on fortifications and other branches of military science to a class of officers and citizens in the city of New York. The views which he then presented on the best means of national defense were in advance of the "piping times of peace" in 1818, but have been since demanded to be eminently sound and practical by the terrible experience of 1861—1862.

His chief reliance for national defense was in the *military habits* of the great body of the American people—organized into suitable militia departments corresponding in the main to the limits of the several states, officered by men of the right capacity, scientific

education, and military training. The officers were required to assemble annually at stated periods, either in camps or rendezvous, at some central point in the department, to receive instruction from a few competent teachers of the military art. We give the plan in his own language as published at the time.

I. Let the United States be divided into military departments, say thirty in number; each of those departments to be wholly comprised within the same state, whenever this can be done.

II. To each of those departments let there be attached a military instructor, (under the authority of the United States,) who should receive the pay and emoluments of a colonel of infantry, and have the brevet-rank of a brigadier-general. These instructors to be gentlemen of established character and reputation, and who have received a regular scientific military education.

III. Let the officers of each brigade of militia in the United States be required to assemble annually at stated periods, either in camp or rendezvous, at some central point in the brigade, there to remain six days, for the purpose of military instruction. Let each instructor attend in succession at the several camps or places of rendezvous in his department, and devote himself assiduously to the instruction of the officers there assembled. One portion of the day might be devoted to practical drills, and field evolutions—also to the turning off, mounting, and relieving guards and sentinels, while the remainder could be most usefully employed in explaining and illustrating the principles of tactics generally, of artillery, of permanent and field fortification, the duties of troops in camp and in garrison, and such other branches as time and circumstances might permit, by means of familiar explanatory lectures.

IV. Let each officer receive from the government a reasonable allowance for his expenses while attending the instruction, and also while going to, and returning from, the camp or rendezvous.

Some of the principal advantages that would result from the adoption of the foregoing plan, I conceive would be as follows, viz. :—

1. The same system of tactics and discipline would pervade the whole mass of the militia—the instructors being imperatively required to adhere to one system. This would be a very important advantage.

2. By this means the country, in the course of a few years, would be furnished with a well organized military force, of at least one million of men, composed of the best materials in the world for soldiers; the whole of which, the officers having been regularly and correctly instructed, might be rendered, in the course of a few weeks, after being called into service, perfectly competent to the efficient discharge of all the duties of the field. This assertion is not founded upon conjecture. An experience of nearly fifteen years in military instruction, has convinced me, that any of our regiments of militia, in their present state of discipline, if brought into the field and placed under competent officers, could, by three weeks instruction, be prepared for discharging all the duties of regular troops. The instruction, then, in time of peace, of the officers, becomes an object of great importance;—that of the privates is of secondary consideration. There is no difficulty in making soldiers, when officers understand their duty, and are disposed to perform it.

It may perhaps be objected to the foregoing plan, that the time proposed for the officers to remain in camp or rendezvous, is too limited to admit of their deriving much advantage therefrom. In answer to this I will observe, that a due share of experience in this species of instruction, has fully convinced me, that they would acquire more correct military information in six days, under a competent and systematic instructor, than they usually acquire under the present system, during the whole period from eighteen to forty-five years of age; and that, after attending two or three similar courses, the great body of them would be perfectly competent to the correct, efficient, and useful discharge of all the duties of the field. From the best calculation I have been able to make,

I feel confident, that the whole necessary expense of carrying this plan into full and effective operation, would not exceed six hundred thousand dollars—it would probably fall short of that sum. Whether the expense, then, is to be considered as disproportionate to the object in view, and therefore to constitute a barrier to its accomplishment, must be decided by the sound discretion of the representatives of the people. It appears to me, however, to bear no greater ratio to it, than does a grain of sand to the globe we inhabit. The cultivation of military science must also be viewed as of the first importance in a system of military defense for our country. The plan already detailed, is calculated for the general dissemination of practical military information throughout the community, but is not adapted to the investigation of principles. This can only be done at seminaries, where it constitutes a branch of regular attention and study; and where theory and practice can, in due proportion, be combined. At those seminaries would be formed our military instructors, our engineers, and our generals; and from those, as from so many foci, would all the improvements in the military art be diffused throughout the country.

In the lectures delivered in 1818, Capt. Partridge, in view of the inevitable disintegration by frost and moisture, and the improvements in the science of attack, anticipated the insufficiency of permanent fortifications—of works of masonry, no matter how expensively or strongly constructed—to the defense of our principal harbors against the attacks of a foreign foe; his reliance was on the general diffusion of military science and training amongst the militia, on an efficient navy, and the following plan of marine defense.

I. At the most important and exposed points on our seaboard, let one or two principal works of the most permanent kind be erected: these works to be kept in perfect repair, to be plentifully supplied with all the munitions of war, and the guns and carriages well secured from the weather by means of pent houses.

II. In the vicinity of all the most exposed and vulnerable points on the seaboard, let spacious and permanent arsenals be constructed, in which, let there be deposited ample supplies of cannon, mortars, gun carriages, materials for platforms, and other munitions of war, where they would remain perfectly safe from the weather.

III. In case of war or threatened invasion, let temporary works, either of earth, or of wood, be constructed at all the most vulnerable points, which could be readily furnished with cannon, gun carriages, platforms, and all the necessary implements and munitions from the arsenals in their vicinity.

* f. As soon as peace is restored, these works should be dismantled, and all their apparatus returned to the arsenals from whence it was taken. In case of future emergencies, they could be restored, or others of the same descriptions, constructed in their places, which could be supplied from the arsenals in the manner above stated. The efficacy in marine defense, of works of the above description, I presume will not be doubted by any scientific military man. Should any one, however, be disposed to doubt it, I would beg leave to refer him to the defense of Fort Moultrie, in the harbor of Charleston, South Carolina, when attacked by the British shipping, during the Revolutionary war, and also to the defense made by the small fort at Stonington, Connecticut, when attacked in a similar manner during the last war.

By adopting this system, I think the following advantages would result:—

1. A more secure defense would be obtained. By knowing the description of force we had to encounter, we should be enabled to construct our temporary works in a manner the best calculated to repel it; and as the gun carriages, platforms, and implements, when taken from the arsenals, would be sound and in perfect order, we might reasonably calculate these works would make a more

vigorous resistance than permanent ones, which, with their apparatus, are in a state of partial dilapidation and decay.

2. The system would be much less expensive than the one by permanent fortification. Those temporary works could ordinarily be constructed by the troops with very little, if any, additional expense; but in case of pressing emergency, the zeal and patriotism of the people might be relied upon with safety, to supply any amount of labor that might be necessary, as was the case at New York in 1814. As it is not proposed they should be retained as military stations in time of peace, the expense of keeping them in repair would be nothing.

In the early part of 1819, Capt. Partridge was engaged in the exploring survey of the North Eastern boundary, under the fifth article of the treaty of Ghent. While on this survey he determined from barometrical and thermometrical observations of the altitudes of the Highlands dividing the rivers which flow northerly into the St. Lawrence, from those which flow southerly into the Atlantic ocean; he also made a profile of the country between several points on the St. Lawrence, and corresponding position in the state of Maine.

In 1820, Capt. Partridge resigned his position in this survey, for the purpose of carrying into practical effect a plan of education, which had occupied much of his attention since 1810, and which in its main features was, doubtless, suggested by his experience at Hanover, and West Point, and was calculated to supply certain deficiencies which he and others had already noticed in our American colleges and higher seminaries of learning. His views both of the deficiencies and their remedies were set forth in a lecture delivered at this time, which was subsequently printed. After defining "education in its most perfect state to be the preparing a youth in the best possible manner for the correct discharge of the duties of any station in which he may be placed," in this lecture he proceeds to characterize the existing plan of instruction.

1. It is not sufficiently practical, nor properly adapted to the various duties an American citizen may be called upon to discharge. Those of our youth who are destined for a liberal education, as it is called, are usually put, at an early age, to the study of the Latin and Greek languages, combining therewith a very slight attention to their own language, the elements of arithmetic, &c.; and after having devoted several years in this way, they are prepared to become members of a college or university.

Here they spend four years for the purpose of acquiring a knowledge of the higher branches of learning; after which, they receive their diplomas, and are supposed to be prepared to enter on the duties of active life. But, I would ask, is this actually the case? Are they prepared in the best possible manner to discharge correctly the duties of any station in which fortune or inclination may place them? Have they been instructed in the science of government generally, and more especially in the principles of our excellent Constitution, and thereby prepared to sit in the legislative councils of the nation? Has their attention been sufficiently directed to those great and important branches of national industry and sources of national wealth—agriculture, commerce, and

manufactures? Have they been taught to examine the policy of other nations, and the effect of that policy on the prosperity of their own country? Are they prepared to discharge the duties of civil or military engineers, or to endure fatigue, or to become the defenders of their country's rights, and the avengers of her wrongs, either in the ranks or at the head of her armies? It appears to me not; and if not, then, agreeably to the standard established, their education is so far defective.

2. Another defect in the present system, is, the entire neglect, in all our principal seminaries, of physical education, or the due cultivation and improvement of the physical powers of the students.

The great importance and even absolute necessity of a regular and systematic course of exercise for the preservation of health, and confirming and rendering vigorous the constitution, I presume, must be evident to the most superficial observer. It is for want of this, that so many of our most promising youths lose their health by the time they are prepared to enter on the grand theatre of active and useful life, and either prematurely die, or linger out a comparatively useless and miserable existence. That the health of the closest applicant may be preserved, when he is subjected to a regular and systematic course of exercises, I know, from practical experience; and I have no hesitation in asserting, that in nine cases out of ten, it is just as easy for a youth, however hard he may study, to attain the age of manhood, with a firm and vigorous constitution, capable of enduring exposure, hunger and fatigue, as it is to grow up puny and debilitated, incapable of either bodily or mental exertion.

3. A third defect in our system is, the amount of idle time allowed the students; that portion of the day during which they are actually engaged in study and recitations, under the eye of their instructors, comprises but a small portion of the whole; during the remainder, those that are disposed to study, will improve at their rooms, while those who are not so disposed, will not only not improve, but will be very likely to engage in practices injurious to their constitutions and destructive to their morals. If this vacant time could be employed in duties and exercises, which, while they amuse and improve the mind, would at the same time invigorate the body and confirm the constitution, it would certainly be a great point gained. That this may be done, I shall attempt in the course of these observations, to show.

4. A fourth defect is, the allowing to students, especially to those of the wealthier class, too much money, thereby inducing habits of dissipation and extravagance, highly injurious to themselves, and also to the seminaries of which they are members. I have no hesitation in asserting, that far the greater portion of the irregularities and disorderly proceedings amongst the students of our seminaries, may be traced to this fatal cause. Collect together at any seminary, a large number of youths, of the ages they generally are at our institutions, furnish them with money, and allow them a portion of idle time, and it may be viewed as a miracle, if a large portion of them do not become corrupt in morals, and instead of going forth into the world to become ornaments in society, they rather are prepared to become nuisances to the same. There is in this respect, an immense responsibility resting on parents and guardians, as well as on all others having the care and instruction of youth, of which it appears to me they are not sufficiently aware.

When youths are sent to a seminary, it is presumed they are sent for the purpose of learning something that is useful, and not to acquire bad habits, or to spend money; they should consequently be furnished with every thing necessary for their comfort, convenience and improvement, but money should in no instance be put into their hands. So certainly as they have it, just so certainly will they spend it, and this will, in nine cases out of ten, be done in a manner seriously to injure them, without any corresponding advantage. It frequently draws them into vicious and dissolute company, and induces habits of immorality and vice, which ultimately prove their ruin. The over-weening indulgence of parents, has been the cause of the destruction of the morals and future usefulness of many a promising youth. They may eventually discover their error, but alas, it is often too late to correct it. Much better does that person discharge the duties of a real friend to the thoughtless, unwary youth, who withholds from him the means of indulging in dissipated and vicious courses.

5. A fifth defect is the requiring all the students to pursue the same course of studies.

All youth have not the same inclinations, nor the same capacities; one may possess a particular inclination and capacity for the study of the classics, but not for the mathematics and other branches of science; with another it may be the reverse. Now it will be in vain to attempt making a mathematician of the former, or a linguist of the latter. Consequently, all the time that is devoted in this manner, will be lost, or something worse than lost. Every youth, who has any capacity or inclination for the acquirement of knowledge, will have some favorite studies, in which he will be likely to excel. It is certainly then much better that he should be permitted to pursue those, than, that by being forced to attend to others for which he has an aversion, and in which he will never excel, or ever make common proficiency, he should finally acquire a dislike to all study. The celebrated Pascal, is a striking instance of the absurdity and folly of attempting to force a youth to attend to branches of study, for which he has an utter aversion, to the exclusion of those for which he may possess a particular attachment. Had the father of this eminent man persisted in his absurd and foolish course, France would never have seen him, what he subsequently became, one of her brightest ornaments.

6. A sixth defect is the prescribing the length of time for completing, as it is termed, a course of education. By these means, the good scholar is placed nearly on a level with the sluggard, for whatever may be his exertions, he can gain nothing in respect to time, and the latter has, in consequence of this, less stimulus for exertion. If any thing will induce the indolent student to exert himself, it is the desire to prevent others getting ahead of him. It would be much better to allow each one to progress as rapidly as possible, with a thorough understanding of the subject.

Having stated what appeared to him the most prominent defects in the academies and colleges as organized and conducted, he next proceeds to point out the remedies.

1. The organization and discipline should be strictly military.

Under a military system, subordination and discipline are much more easily preserved than under any other. Whenever a youth can be impressed with the true principles and feelings of a soldier, he becomes, as a matter of course, subordinate, honorable, and manly. He disdains subterfuge and prevarication, and all that low cunning, which is but too prevalent. He acts not the part of the assassin, but if he have an enemy, he meets him openly and fairly. Others may boast that they have broken the laws and regulations of the institution of which they are, or have been members, and have escaped detection and punishment, by mean prevarication and falsehood. Not so the real soldier. If he have broken orders and regulations, he will openly acknowledge his error, and reform; but will not boast of having been insubordinate. Those principles, if imbibed and fixed in early youth, will continue to influence his conduct and actions during life; he will be equally observant of the laws of his country, as of the academic regulations under which he has lived; and will become the more estimable citizen in consequence thereof. I shall not pretend, however, that all who wear a military garb, or live, for a time, even under a correct system of military discipline, will be influenced in their conduct by the principles above stated; but if they are not, it only proves that they have previously imbibed erroneous principles, which have become too firmly fixed to be eradicated; or that nature has not formed them with minds capable of soaring above what is low and groveling.

2. Military science and instruction should constitute a part of the course of education.

The constitution of the United States has invested the military defense of the country in the great body of the people. By the wise provisions of this instrument, and of the laws made in pursuance thereof, every American citizen, from eighteen to forty-five years of age, unless specially exempted by law, is liable

to be called upon for the discharge of military duty—he is emphatically a citizen soldier, and it appears to me perfectly proper that he should be equally prepared by education to discharge, correctly, his duties in either capacity. If we intend to avoid a standing army, (that bane of a republic, and engine of oppression in the hands of despots,) our militia must be patronized and improved, and military information must be disseminated amongst the great mass of the people; when deposited with them, it is in safe hands, and will never be exhibited in practice, except in opposition to the enemies of the country. I am well aware there are amongst us many worthy individuals, who deem the cultivation of military science a sort of heresy, flattering themselves, and endeavoring to induce others to believe, that the time has now arrived, or is very near, when wars are to cease, and universal harmony prevail amongst mankind. But, my fellow-citizens, be not deceived by the syren song of peace, peace, when, in reality, there is no peace, except in a due and constant preparation for war. If we turn our attention to Europe, what do we behold? A league of crowned despots, impiously called holy, wielding a tremendous military force of two millions of mercenaries! Ill-fated Naples, and more ill-fated Spain, have both felt the effects of their *peaceable* dispositions, and were it not for the wide-spreading Atlantic, which the God of nature in his infinite goodness has interposed between us, we also, ere this, should have had a like experience. The principles of liberty are equally obnoxious to them, whether found in Europe, Asia, Africa, or America. If rendering mankind ignorant of the art of war, (as a science,) would prevent wars, then would I unite most cordially with those, usually termed peace-men, for the purpose of destroying every vestige of it. But such, I am confident, would not be the result. Wars amongst nations do not arise because they understand how to conduct them skillfully and on scientific principles; but are induced by the evil propensities and dispositions of mankind. To prevent the effect, the cause must be removed. We may render nations ignorant of the use of the musket and bayonet; we may carry them back, as respects the art of war, to a state of barbarism, or even of savagism, and still wars will exist. So long as mankind possess the dispositions which they now possess, and which they ever have possessed, so long they will fight. To prevent wars, then, the disposition must be changed; no remedy short of this, will be effectual. In proportion as nations are rude and unskilled in the art of war, will their military code be barbarous and unrelenting, their battles sanguinary, and their whole system of warfare, destructive. War, therefore, in such a case, becomes a far greater evil, than it does under an improved and refined system, where battles are won more by skill than by hard fighting, and the laws of war are proportionally ameliorated. What rational man, what friend of mankind, would be willing to exchange the present humane and refined system of warfare, for that practiced by an Attila, a Jenghis Khan, a Tamerlane, or a Mahomet, when hundreds of thousands fell in a single engagement, and when conquest and extermination were synonymous terms. On the principles of humanity, then, it appears to me that, so long as wars do exist, the military art should be improved and refined as much as possible; for, in proportion as this is done, battles will be less sanguinary and destructive, the whole system more humane, and war itself a far less evil. But independent of any connection with the profession of arms, or of any of the foregoing considerations, I consider a scientific knowledge of the military art, as constituting a very important part of the education of every individual engaged in the pursuit of useful knowledge, and this for many reasons; viz. :—

First. It is of great use in the reading of history, both ancient and modern.

A large portion of history is made up of accounts of military operations, descriptions of battles, sieges, &c. How, I would ask, is the reader to understand this part, if he be ignorant of the organization of armies, of the various systems of military tactics, of the science of fortification, and of the attack and defense of fortified places, both in ancient and modern times? Without such knowledge it is evident he derives, comparatively but little information from a large portion of what he reads.

Second. It is of great importance in the writing of history. I presume it will not be denied, that in order to write well on any subject, it must be under-

stood. How, then, can the historian give a correct and intelligible account of a campaign, battle, or siege, who is not only unacquainted with the principles on which military operations are conducted, but is also ignorant of the technical language necessary for communicating his ideas intelligibly on the subject? This is the principal reason why, as it appears to me, the ancient historians were so much superior to the modern. Many of their best historical writers were military men. Some of them accomplished commanders. The account of military operations by such writers as Xenophon, Thucydides, Polybius and Caesar, are perfectly clear and intelligible, whereas when attempted by the great body of modern historians, the most we can learn is, that a fortress was besieged and taken, or that a battle was fought and a victory won, but are left in entire ignorance of the principles on which the operations were conducted, or of the reasons why the results were as they were.

Third. It is essentially necessary for the legislator.

The military defense of our country is doubtless one of the most important trusts which is vested by the constitution in the general government, and it is a well known fact, that more money is drawn from the people and disbursed in the military, than in any other department of the government. Now as all must be done under the sanction of the law, I would beg leave to inquire, whether it be not of the greatest importance, that those who are to make such laws should be in every respect well prepared to legislate understandingly on the subject? That there has been, and still is, a want of information on this subject amongst the great body of the members of Congress, I think will be perfectly evident to any one who is competent, and will take the trouble to examine our military legislation since the conclusion of the Revolutionary war. I feel little hesitation in asserting, that from want of this information, more than from any other cause, as much money has been uselessly expended in our military department alone, as would cancel a large portion of the national debt.

Fourth. It is of great use to the traveler.

Suppose a young man, with the best education he can obtain at any of our colleges or universities, were to visit Europe, where the military constitutes the first class of the community, and where the fortifications constitute the most important appendages to nearly all the principal cities, how much does he observe, which he does not understand? I he attempt a description of the cities, he finds himself embarrassed for want of a knowledge of fortification. If he attempt an investigation of the principles and organization of their institutions, or of their governments, he finds the military so interwoven with them all, that they can not be thoroughly understood without it. In fine, he will return with far less information, than with the aid of a military education he might have derived. As it respects the military exercises, I would observe, that were they of no other use than in preserving the health of students, and confirming in them a good figure and manliness of deportment, I should consider these were ample reasons for introducing them into our seminaries generally; they are better calculated than any others for counteracting the natural habits of students, and can always be attended to, at such times as would otherwise be spent in idleness or useless amusements. Having expressed my views thus fully on this subject, I will next proceed to state more specifically the other branches which I would propose to introduce into a complete course of education: and—

1. The course of classical and scientific instruction should be as extensive and perfect as at our most approved institutions. The students should be earnestly enjoined and required to derive as much of useful information from the most approved authors, as their time and circumstances would permit.

2. A due portion of time should be devoted to practical geometrical and other scientific operations in the field. The pupils should frequently be taken on pedestrian excursions into the country, be habituated to endure fatigue, to climb mountains, and to determine their altitudes by means of the barometer as well as by trigonometry. Those excursions, while they would learn them to walk, (which I estimate an important part of education,) and render them vigorous and healthy, would also prepare them for becoming men of practical science generally, and would further confer on them a correct *coup d'œil* so essentially

necessary for military and civil engineers, for surveyors, for travelers, &c., and which can never be acquired otherwise than by practice.

3. Another portion of their time should be devoted to practical agricultural pursuits, gardening, &c.

In a country like ours, which is emphatically agricultural, I presume it will not be doubted, that a practical scientific knowledge of agriculture would constitute an important appendage to the education of every American citizen. Indeed the most certain mode of improving the agriculture of the country will be to make it a branch of elementary education. By these means, it will not only be improved, but also a knowledge of their improvements generally disseminated amongst the great mass of the people.

4. A further portion of time should be devoted to attending familiar explanatory lectures on the various branches of military science, on the principles and practice of agriculture, commerce and manufactures, on political economy, on the constitution of the United States, and those of the individual states, in which should be pointed out particularly the powers and duties of the general government, and the existing relations between that and the state governments, on the science of government generally. In fine, on all those branches of knowledge which are necessary to enable them to discharge, in the best possible manner, the duties they owe to themselves, to their fellow men, and to their country.

5. To the institution should be attached a range of mechanics' shops, where those who possess an aptitude and inclination might occasionally employ a leisure hour in learning the use of tools and acquiring a knowledge of some useful mechanic art.

The division of time, each day, I would make as follows, viz. :—

Eight hours to be devoted to study and recitation; eight hours allowed for sleep. Three hours for the regular meals, and such other necessary personal duties as the student may require. Two hours for the military and other exercises, fencing, &c. The remaining three hours to be devoted, in due proportion, to practical agricultural and scientific pursuits and duties, and in attending lectures on the various subjects before mentioned.

Some of the most prominent advantages of the foregoing plan would, in my opinion, be the following; viz. :—

1. The student would, in the time usually devoted to the acquirement of elementary education, (say six years) acquire, at least, as much, and I think I may venture to say more, of book knowledge, than he would under the present system.

2. In addition to this, he would go into the world an accomplished soldier, a scientific and practical agriculturist, an expert mechanician, an intelligent merchant, a political economist, legislator and statesman. In fine, he could hardly be placed in any situation, the duties of which he would not be prepared to discharge with honor to himself and advantage to his fellow-citizens and his country.

3. In addition to the foregoing, he would grow up with habits of industry, economy and morality, and, what is of little less importance, a firm and vigorous constitution; with a head to conceive and an arm to execute—he would emphatically possess a sound mind in a sound body.

After much correspondence Capt. Partridge decided to carry out his principles of education in an institution organized on his own plan and conducted by himself, with such assistance as he could command, in his native village of Norwich, Vermont. Here he opened, on the 4th of September, 1820, the American Literary, Scientific and Military Academy, on which the pupils or their parents had their choice of studies, out of a course as extensive as that of any academy and college in New England combined—in which

military training formed a prominent feature, and the mathematics, especially as applied to surveying and engineering, received special attention. During the four years and half of its continuance in Norwich the Academy was attended by 480 pupils, representing twenty-one out of the twenty-four states, and of these, and especially of such as continued on an average two years at the institution, a large proportion became distinguished in military, public, and business life—as large it is believed as the records of any other institution for the same period of time can show. Its success demonstrated beyond cavil, that military exercises and duties are not inconsistent with ardent devotion, and the highest attainments in literary and scientific studies.

In 1824, the citizens of Middletown, Connecticut, made a liberal subscription to secure the location there, of a college about to be established in that State, under Episcopal auspices. Failing in that object, by the location of the institution at Hartford, where it now exists under the name of Trinity College, they invited Capt. Partridge to remove his Academy to their city, and offered to erect and place at his disposal suitable buildings for his accommodation. This invitation and offer were accepted, and on the 1st of April, 1825, he closed his institution at Norwich, and on the 1st of September following, opened his new course of instruction at Middletown, with an attendance of two hundred and ninety-seven pupils in the first year. During the three years—up to September 1828, the American Literary, Scientific, and Military Academy at Middletown remained under his superintendence, there were nearly twelve hundred pupils representing every State and Territory of the United States, the British Provinces, Mexico, several of the South American States, and the West Indies. This attendance shows conclusively, that the military and scientific element, together with an optional course of study, and a term of residence limited by the ability of the pupil to complete the course, met a want not provided for in existing colleges. Of those who completed the full course of study begun at Norwich, as large a proportion, as the corresponding graduates of any American college, attained a high degree of usefulness and eminence in widely diversified fields of labor. Among its graduates are to be found the founders or professors of several State Military Institutes, many officers of the highest rank in the military service of the United States, several eminent civil engineers, superintendents, of railroads, members of Congress, lawyers, and men of practical efficiency and success in every line of business.

One of the characteristic features of Captain Partridge's system:

of instruction and discipline at Middletown, was the military marches and pedestrian excursions for scientific and recreating purposes conducted under his personal command, or in his company. Several of these excursions occupied three or four weeks, extending in one instance to Washington. The military marches amounted in the aggregate to over two thousand miles, and these and the various pedestrian excursions, included visits to nearly all points of military and historical interest in New England and New York. The immediate and controlling reasons which induced Capt. Partridge to leave Middletown, are not known to the writer of this memoir. He has however, understood it was owing partly to a desire for temporary relief from the cares and confinement of immediate superintendence, that he might start a similar institution in the neighborhood of New York, and partly from disgust at the refusal of the Legislature of Connecticut in 1828, to grant to the institution at Middletown, the usual privileges and powers of a college.

In 1833, 1834, 1837, and 1839, Capt. Partridge was elected representative from the town of Norwich, to the Legislature of Vermont, and in that capacity labored to give efficiency to the military system of the State. In 1834, he secured for certain petitioners a charter for the Norwich University, in which the Trustees are required "to provide for a constant course of instruction in military science and civil engineering," and are "prohibited from establishing any regulations of a sectarian character, either in religion or politics." Of this corporation, consisting of twenty-five trustees, Capt. Partridge was a member, and in organizing the institution in 1825, he was elected president of the Faculty. He continued to instruct in his own department of military science and engineering, and administered the affairs of the university till 1844, when owing to some difficulties arising out of the use of the building, arms, and accoutrements, which were his private property, he resigned.

In 1838, he was influential in calling together a convention of military officers and persons interested in giving greater efficiency to the organization of the militia of the several states, to meet for consultation. This convention met at Norwich on the 4th of July; and continued to meet annually for many years, to discuss plans for the organization and discipline of the militia, for the dissemination of a knowledge of military science, for the defense of the coast, &c. Many reports of this body were drawn up by him, and the proceedings were forwarded to, and printed by order of the Congress of the United States.

In 1839, on the request of many influential citizens, he visited

Portsmouth, Virginia, to establish a Military School, which he did, and which was soon after recognized by the Legislature of the State as the Virginia Literary, Scientific, and Military Institute, and aided by an appropriation out of the Literary Fund. This Institute, with an Institute of a similar character at Lexington, in the western part of the State, has been greatly instrumental in diffusing widely in Virginia a knowledge and taste for military affairs. The success of this institution, and the personal influence of many of his own scholars at Norwich and Middletown, led to the establishment of similar schools in other southern states.

In May, 1842, Capt. Partridge accepted the position of Camp Instructor for a large body of officers and men of the Pennsylvania volunteer militia in encampment at Reading, Berks County. Each evening he delivered a lecture to officers assembled in the General's marquee, and during the day exercised the troops in the manual of arms, and in company, regimental, and brigade movements in the field. On this, and many similar occasions, he demonstrated the correctness and practicability of his theory of national defense, so far as testing the qualifications of officers for command, and giving accuracy, rapidity, and steadiness of exercise and movements to troops, by assembling officers and men of the State Militia, once or twice in the year, in convenient numbers and places, under instructors properly qualified for the work. A few instructors, themselves trained in the best military institutions, and familiar with every improvement in military organization, equipment, and movement, and especially when clothed with the reputation of success in actual service, would soon bring the entire militia of the states into a uniform system, and give respectability and efficiency to this department of the public service. This result would be more speedily realized if a number of educational institutions similar to those which he had organized under many disadvantages and against many prejudices, could call out and cultivate military taste and accomplishments among a portion of the young men of each state.

In 1853, he opened at Brandywine Springs, near Wilmington, in the State of Delaware, another institution in which he fondly hoped his ideal of a National school of education would be realized—an institution in which physical training in connection with military exercises and movements, should accompany the acquisition of practical knowledge of the great principles of science that underlie all the arts of peace and war, and resorted to by students from every state of the American Union. His plan as developed in conversation with those directly interested, embraced his old ideas of scienc

tific, and literary studies with systematic pedestrian excursions,* and marches in vacations to the great objects of natural, economical, and historical interest in different parts of the country. In this latter particular, he unconsciously applied the suggestion of Milton in his letter to Samuel Hartlib, that "the students of his Academy should go out in companies with prudent and staid guides to all quarters of the land, learning and observing all places of strength, and all commodities (facilities) of building and of soil, for towns and tillage, harbors and ports of trade,—even sometimes taking sea as far as to our navy to learn there also, what they can in the practical knowledge of sailing and sea-fight." Arrangements were made for a class of ten or twelve of the most advanced and matured cadets to accompany him to Europe to study the strategy of the great battles of the world, and the armies, armories, and resources of the great nations of Europe—thus again realizing Milton's plan of gratifying "the desire of the more hopeful youth" "to see other countries at three or four and twenty years of age, not to learn principles, but to enlarge experience and make wise observation." But these hopes were darkened for a time by a great disaster, and soon extinguished in the sudden death of the great projector. In the autumn of 1853, the buildings at Brandywine Springs, were consumed by fire, and although arrangements were at once made to secure suitable accommodations at Bristol, Pennsylvania, and upwards of one hundred pupils enrolled their names to attend for a year at that place, still the great motive power of the enterprise was stricken down.

At the close of the year, 1853, Capt. Partridge returned to Norwich, where his family still resided, in apparently good health and the best spirits. A few days after he reached home, he was attacked by sharp and excruciating pains in his back, which were soon subdued by anodynes, but from the prostration and the cause, which proved on a post-mortem examination to be an aneurism near the base of the spine, and which had been exhausting his vitality for years—he never rallied, and on the 17th of January, 1854, he breathed his last—widely and deeply mourned by troops of friends, who loved and admired him as their teacher, or looked up to him as the best expounder of principles of military science and education, and of national defense.

* Captain Partridge attached much importance to pedestrian excursions in reference both to hygienic, and educational considerations. To these excursions he attributed his own robust health, and his familiar knowledge of all the details of American battles. In one year, (1830,) he made four excursions from Norwich, each occupying from four to six days—and from one hundred and fifty to four hundred miles—the last day's walk generally averaging over sixty miles. He had ascended and measured the altitude of all the highest mountain elevations in the Northern States.

Although living most of his life in the discharge of educational and public duties, under circumstances inconsistent with "a local habitation," he had strong domestic tastes and attachments, and was a genial companion in his own room and home. In 1837, he married Miss Swazey, the daughter of a merchant in Claremont, New Hampshire, and to this happy union were born two children. The oldest boy, George, was educated by the father on his own system, and had displayed vigorous health, and strong partialities and attainments in mathematical studies and their applications; but he survived his father only a few months—"long desolate months they were to the widow and children"—and the tenement of that bright intellect was laid by the side of that of his hardy and indefatigable father in the little village burying-ground. The other son Henry, as he grew up, showed a partiality for the profession of law, and was pursuing his studies in Warren, Penn., when the call of the President of the United States for volunteers, summoned him to the defense of the flag of the country. He enlisted for the war, and was promoted to a captaincy in a Pennsylvania regiment, which was attached to the army of the Potomac, whose varying fortunes he shared till, greatly weakened by exposure and disease, he was honorably discharged from the service. His superior officer in writing to his mother, says: "He is in every respect a model officer. How could he be otherwise? He has it all by right of inheritance, and I fully appreciate that you have made a very great contribution to the government and the country in sending him forth to fight the battles which have been forced upon us."

POPULAR OBJECTIONS TO A NATIONAL MILITARY SCHOOL.

NOTE.

As an Appendix to our Memoir of Capt. Alden Partridge, we republish the following Memorial by him to the Congress of the United States, not because we approve the objects or the arguments of either document, but as part of the educational history of the country.

MEMORIAL OF ALDEN PARTRIDGE,

Relating to the Military Academy at West Point, and praying that young men educated at other military schools may have an equal chance for admission to the army as those young men have who are educated at West Point. January 21, 1841. Referred to the Committee on Military Affairs.

To the Honorable Congress of the United States:—The memorial of Alden Partridge, President of the Norwich University, at Norwich, State of Vermont, respectfully sheweth:

That your memorialist holds it to be a cardinal principle of our republican institutions, that stations of honor, trust, and emolument should be equally open to all our citizens, to which all have an equal right to aspire, and from which none can constitutionally be excluded by any law, rule, or regulation whatever. Your memorialist has, however, witnessed, with deep regret, a direct violation of this vital principle of our constitution, by the rules and regulations adopted for the organization and government of the Military Academy at West Point. The cadets of that institution, all of whom are educated at the public expense, have, for many years, monopolized nearly, if not quite, all of the stations of honor, trust, and emolument, above that of a non-commissioned officer, in the military establishment of the United States, to the utter exclusion of those who are equally well qualified, equally meritorious, and who are educated at their own expense. But, in order to place this subject more clearly before your honorable body, your memorialist would call your attention to the law of the 29th of April, 1812, entitled, "An act making further provision for the corps of engineers." By the provisions of this act, no candidate can be admitted into the Military Academy who is under fourteen, or over twenty-one, years of age. The effect of this provision is to exclude every young man in the United States who is above twenty-one years of age from the appointment of cadet, while the rules of the War department require that none except those educated at this academy can be commissioned in the army of the United States. The effect, then, of the law and regulation is to utterly exclude all the youth of our country, except such select few as the President may think proper to place in this "public charity school," from the military service of their country, who are above twenty-one years of age, unless they will enter in the humble capacity of *privates* or *non-commissioned officers*. And can such a system be in accordance with the principles of our constitution? Your memorialist believes not. On

the contrary, he feels confident in the assertion that it is a most flagrant and palpable violation of them. The direct and certain effect of this institution is to extend *Executive patronage*; for the President has the entire selection of the *chosen two hundred and fifty* who are to be placed in the institution; and also to establish an *aristocracy* of the most dangerous kind, viz.: a *military aristocracy* in the United States. What, your memorialist would ask, is an aristocracy? Is it not where any particular class in a State claims and exercises privileges of which the great body of the people are deprived? And do not the cadets at West Point enjoy such privileges? and if so, do they not constitute an aristocracy? Your memorialist believes that neither the fact nor the inference can be controverted. But your memorialist will go further, and aver that the regulations at West Point have not only constituted an aristocracy in the United States, but that this aristocracy has already become, in a great degree, *hereditary*. How many individuals, your memorialist would ask, who have held offices of honor, trust, or emolument, under the Government, for the last twenty-five years, have had their sons, brothers, nephews, or other relatives, educated at the public expense at West Point, to the entire exclusion of those who (to say the least,) were equally meritorious, and equally capable of rendering service to the republic? And how many of those thus educated have ever rendered any service whatever? A reference to the rolls of the institution will answer these inquiries. Your memorialist has *personal* knowledge of many instances. Your memorialist is well aware that it has been attempted, by the friends of this monstrous invasion of the rights of the people, to cast around it the mantle of Mr. Jefferson. Your memorialist is ready to grant that the institution was established during the early part of the first term of Mr. Jefferson's administration; but denies that any inference can be drawn from that circumstance to sustain the present system. The institution *then* consisted only of the corps of engineers, which was limited to sixteen officers and four cadets, without any of those exclusive privileges which have since been conferred upon it. On the 29th of April, 1812, (just previous to the declaration of war,) a law was, however, passed, entitled "An act making further provision for the corps of engineers;" by the provisions of which, the whole number of cadets, whether of infantry, artillery, or riflemen, was not to exceed two hundred and fifty; and the President to appoint a limited number of cadets, and conferring on him a *discretionary* power to attach them to the Military Academy, was evidently induced by the certainty of immediate war with Great Britain, and had a direct reference to a *war* establishment. Your memorialist would respectfully call the attention of your honorable body particularly to the provisions of the law of 1812 just referred to; and, if he does not much mistake, it will satisfactorily appear that the President is not *required*, but simply authorized, to appoint a single cadet; and that it is left entirely discretionary with him, after they are appointed, to attach them to the Military Academy, or to attach them to their respective companies, agreeably to the provisions of other laws then in existence. And here your memorialist would observe that, in the *peace*-establishment of the army previous to the late war, two cadets were allowed to each company of artillery, light infantry, and infantry, amounting, in the total, to a *larger* number than was authorized by the law of 1812. But neither President Jefferson, nor President Madison considered that the law required of them to fill those vacancies so long as they considered their services were not required: and they con-

sequently did not fill them. The largest number of cadets ever in service at the same time, previous to the late war, did not exceed forty, and seldom exceeded twenty-five. Do the necessities of the country require that any larger number should be retained in service now, than were deemed necessary by Presidents Jefferson and Madison during a time of peace? Your memorialist believes not. But it is urged, in favor of this academy, that it presents a most favorable opportunity for the education of meritorious young men who are poor, and, consequently, unable to educate themselves. Your memorialist, however, has yet to learn by what *constitutional* authority Congress is empowered to appropriate any portion of the public revenue for the support of a *national charity school* for the education of the poor. Besides, if this power did exist, (which your memorialist presumes no reasonable person will contend does,) *all* the poor in the United States have an equal right to the benefits to be derived from its exercise, and that, consequently, the institution at West Point is on quite too limited a plan for the accomplishment of the contemplated object. Either, then, the institution should be very much enlarged, or several others established in different parts of the United States, which would be far more convenient for the great body of the poor. If, however, the rolls of this institution for the last twenty years be examined, it will be found that many more of the *rich* and *influential* have been educated there, than of the *poor*. Poverty, however meritorious the subject of it may be, is but a sorry recommendation for admission to this aristocratic establishment.

But it is further urged, that this institution is *necessary* for the education of the officers of the army; and that, were it abolished, the candidates for commissions would not be properly qualified for the discharge of their duties as officers. Before your memorialist proceeds to examine the truth of this position, he would inquire, at what institution, and at whose expense, Generals Washington, Greene, Knox, Putnam, Lincoln, Sullivan, Morgan, Wayne, Sumter, Pickens, Marion, and all the other officers of the revolutionary army, by whose valor, skill, and patriotic exertions, these United States now constitute a free and independent nation, received their education? The answer is ready: at the ordinary institutions of the country, and at their *own* expense; just as every *American citizen* should be educated. And have the *protéges* of the West Point Academy, on whose education so many millions of dollars of the peoples' money have been expended within the last twenty years, exhibited more skill, more valor, or more patriotism, than did the officers of the revolutionary army? Let the events of the Florida war, as compared with those of the Revolution, answer the question. The truth is, (and it can not be much longer concealed from the view of the people, by the reports of *boards of visitors*,) that the whole system of education at West Point is well calculated to form *military pedants* and *military dandies*, but will never form *efficient soldiers*. Much more important to them is their attention to the *cut* of the *coat*, the placing of a *button*, and the *snowy whiteness of gloves and pantaloons*, than to those *physical and moral qualities* which are absolutely necessary to the correct and efficient discharge of the active duties of the field.

But your memorialist denies the truth of the position, that the West Point Academy is necessary for the education of young men for the army. There are other institutions where military science and instruction constitute a branch of education for the pupils. Of these institutions, however, your memorialist will

particularize but one—and that is the Norwich University, at Norwich, Vermont, over which he has the honor to preside. This institution was incorporated by the Legislature of Vermont, in November, 1834, with full power to confer diplomas, &c. By the act of incorporation, military science is made a part of the education of all the pupils. They are consequently correctly and thoroughly instructed in the theoretical part of military science, and also in the *practical* duties of the soldier, and every one who graduates at this institution is well qualified to discharge the duties of a company officer (and even, if necessary, to command a battalion) in any corps of the army. In order further to prepare them to discharge the more hardy and active duties of the soldier, they occasionally perform military marches. In the month of July, 1840, they performed a march, under the personal command of your memorialist, to the celebrated *military post* of Ticonderoga, carrying their arms, accoutrements, knapsacks, &c.; the whole length of which was one hundred and sixty-five miles. Of this distance, one hundred and forty miles was on foot, and twenty-five miles by steamboat. The march on foot was performed in a little more than five days, crossing the Green Mountain range twice, and the ground, with the heavens for covering, constituted their only resting-place at night. The weather, during the whole march, was hot; and they were enveloped in a cloud of dust, occasioned by the severe drought, nearly the whole distance. They all returned in excellent health and spirits. The youngest member of the corps was thirteen years of age. The other branches of literature and science are attended to as extensively, and the latter much more practically, than at any other institution in the United States; and the students are consequently equally well qualified to discharge their duties in the *cabinet* and in the *field*. But notwithstanding the members of this institution are, to say the least, as well qualified for commissions of any grade, and in any corps of the army, as those of any other institution in the country, and have also obtained the necessary qualifications at their own expense, they are virtually excluded therefrom by the *arbitrary* and *monopolizing* regulations (established without the least sanction of law,) of the Military Academy at West Point. In the month of September, 1840, a member of the Norwich University, the son of a highly respectable gentleman in the city of New York, well recommended, applied to the Secretary of War for a commission in the army, but was informed that there were *no vacancies*, and that the cadets from West Point were *more than sufficient to fill all the vacancies*. On the 21st of December, 1840, your memorialist wrote to the Secretary of War, recommending three young gentlemen, members of the Norwich University, for commissions in the army of the United States; and received an answer, dated War Department, December 29, 1840, from which the following is an extract: "I acknowledge the receipt of your letter of the 21st instant, recommending Messrs. Morris, Stevens, and Dorne, for appointments in the army; and I have here to inform you, in reply, that there being no vacancies at present, the application will be filed for consideration, when any occur, to which they can be appointed." Now your memorialist feels confident that the records of the War Department will show that a large number of cadets at West Point are commissioned every year; and he presumes that such will continue to be the case, unless a radical change is effected. But when young gentlemen of equal respectability and attainments, who have not been of the *favoured few* whom *Executive favor* has admitted into this nursery of aristocracy, to be edu-

ca'ed at the expense of the honest working men of the country, become applicants, their claims are entirely set aside. Against this *unconstitutional, unequal, and monopolizing* practice, your memorialist deems it his duty respectfully, but most decidedly, to protest; and to ask of your honorable body the establishment of some rule whereby the members of the Norwich University, at least, (o whom, in many respects, he stands in the relation of guardian,) may be restored to their *constitutional rights*; that when they become applicants for stations of honor, trust, or emolument, in the military service of their country, they shall stand on terms of equality with the cadets at West Point.

Your memorialist deems it proper here to remark, that in October, 1840, he addressed a communication to the President of the United States, on this subject, requesting to be informed whether, in the opinion of the President, he possessed the power to remedy the grievance of which your memorialist complains; and, if so, whether such power would be exercised for that purpose. To this communication no answer has been received. Your memorialist, availing himself of the privileges granted to every American citizen, by the first amendment of the constitution of the United States, would beg leave to call the attention of your honorable body to some subjects, which he considers grievances of a high order, and respectfully but earnestly solicits that they may be redressed, viz:

1st. Your memorialist considers the Military Academy at West Point a grievance. Under its present organization, it is unconstitutional, calculated to foster a military aristocracy in the country; calculated to depress the militia, (our only constitutional defense,) by engrossing all the patronage of government; and is entirely unnecessary, as military science can be attained at other institutions, from which the necessary officers for the army can be supplied without any tax on the people. Your memorialist, therefore, asks that this institution may be abolished, and that the money that is annually appropriated for its support may be applied to aid in disciplining the militia, and disseminating military information amongst the people, who are its constitutional and safe depositories.

2nd. Your memorialist considers the Board of Visitors that annually assemble at West Point a grievance. This board never had any *existence whatever in law*, but was established by Executive usurpation; yet, to pay the expense of this illegal board, your memorialist believes that more than fifty thousand dollars has been drawn from the public treasury. Your memorialist earnestly solicits that this appropriation, the making of which is a direct sanction to Executive *usurpation*, should be discontinued.

3rd. Your memorialist considers the removal of the head-quarters of the corps of engineers from West Point to Washington a grievance, because it is a direct violation of the law of the 16th of March, 1802, establishing that corps. That law requires the commandant of engineers to reside at West Point, unless ordered, by the President of the United States, on duty at some other place in the line of his profession; and, when at West Point, the law makes him superintendent of the Military Academy; and when he is absent, the next in rank (who is then present,) is made the *legal* superintendent. The appointment, therefore, of any particular officer as permanent superintendent, is evidently illegal, as the law has clearly specified who the superintendent shall be.

All of which is respectfully submitted,

A. PARTRIDGE,

President of Norwich University

JANUARY, 13, 1841.

REMARKS BY THE EDITOR.

We publish the foregoing Memorial of Capt. Partridge, asking Congress to redress "the grievance" of the Military Academy, not because we have the slightest sympathy with the object or main arguments of the memorialist, but as specimens of the opinions held and propagated by a graduate, professor, and superintendent of the Academy, who did more than any other individual to introduce military instruction and exercises in schools not national or professionally military. We can not, however, put it forth without accompanying it with a few brief remarks.

To Capt. Partridge, more than to any one man, and to his pupils, and personal friends, as we believe, is due the popular objections which prevail respecting the United States Military Academy, except so far as the objections spring from the abuse of the mode of appointing Cadets. For nearly twenty years Capt. Partridge was never known to express any doubt of the constitutionality or usefulness of this institution. His objections first took shape and utterance when he was superceded in the superintendence by Colonel Sylvanus Thayer. Of the circumstances and results of his removal, and of the appointment of Col. Thayer, and the subsequent reorganization of the Academy, something has already been said in the History of West Point, in this volume, (p. 17-48,) and more will be said when we come to speak of the labors of Col. Thayer.

So far as these objections are directed to the constitutionality of the laws for establishing the Cadet Corps, as distinct from any other Corps of the army, or against training officers collected together and organized as a school, we think them preëminently frivolous. If any friend of the Academy would assure his doubtful faith in its constitutionality, let him read Capt. Partridge's Memorial, asking the same Congress to establish a system of National Education, which he petitions to redress the grievance of a special school, that every civilized government holds to be indispensable to the right organization of its armies.

So far as these objections are aimed at the mode of appointment and promotion,—confining both to the patronage of one man in the country, or one man in a Congressional District, acting in either case without personal examination of the party to be admitted or promoted, and excluding others, it may be, better qualified,—we hold them to be valid. A more disgraceful record of failures, where an opportunity of selecting the most meritorious candidates existed, can not be shown.

While we believe that candidates are too often recommended and nominated to the appointing power, from family and party considerations, we have seen no reason to believe that the social condition or occupation of parents has influenced the appointments. On the other hand, the records of the Academy, as made out in this particular by the Cadets themselves, exhibit a fair representation from all classes and occupations of society.

According to an official Statement, prepared by Capt. Boynton, and published in his History of the Academy, of "95" cadets admitted from 1842 to 1863 inclusive, the fathers of 1,300 were farmers or planters; of 681, were lawyers; of 672, were merchants; of 377, were mechanics; of 69, were physicians; of 256, were in the civil service; of 116, were clergymen; of 467, were in the army or navy; of 572, were editors, masters of vessels, &c. Of the whole number, 1,136 were orphans, 1,585 were in moderate, 534 in reduced, 62 in indigent, and 324 in independent circumstances. We shall publish the Statement in our next Number.

The views presented in the memorial of Capt. Partridge in 1841, have found advocates in and out of Congress before and since. They were anticipated by the Secretary of War (John C. Calhoun), under whose energetic administration of the Department in 1816, the Academy first assumed the organization of an efficient military school—a place of thorough scientific instruction in the knowledge not simply of military drill, but of the duties of an accomplished artillerist and military engineer; and they have been deepened by the radically vicious system of appointment to cadetship, in which personal and political considerations have in too many instances outweighed the merits of young men, whose natural aptitude and generous ambition would have found here the special field for their largest development and usefulness. These views found expression in the elaborate speech of Franklin Pierce, then a member of the House from New Hampshire, in the discussion of an amendment to the appropriation bill in 1836 (June 30), who “felt bound to oppose the bill in every stage of its progress”—mainly on the ground that “the institution conferred exclusive and gratuitous privileges.”

It is *gratuitous*, because those who are so fortunate as to obtain admission there, receive their education without any obligation, except such as a sense of honor may impose, to return, either by service or otherwise, the slightest equivalent. It is exclusive, inasmuch as only one youth out of a population of more than 47,000 can participate in its advantages at the same time; and those who are successful, are admitted at an age when their characters cannot have become developed, and with very little knowledge of their adaptation, mental or physical, for military life. The system disregards one of those great principles which, carried into practice, contributed perhaps, more than any other, to render the arms of Napoleon invincible for so many years. Who does not perceive that it destroys the very life and spring of military ardor and enthusiasm, by utterly foreclosing all hope of promotion to her soldier and non-commissioned officer? However meritorious may be his services, however pre-eminent may become his qualifications for command, all are unavailing. The portcullis is dropped between him and preferment, the wisdom of your laws having provided another criterion than that of admitted courage and conduct, by which to determine who are worthy of command. They have made an Academy, where a certain number of young gentlemen are educated annually at the public expense, and to which there is, in consequence, a general rush, not so much from sentiments of patriotism, and a taste for military life, as from motives less worthy—the avenue, and the only avenue, to rank in your army.

I deny utterly the expediency and the right to educate at the public expense, any number of young men who, on the completion of their education, are not to form a portion of your military force, but to return to the walks of private life. Such was never the operation of the Military Academy until after the law of 1812; and the doctrine, so far as I have been able to ascertain, was first formally announced by a distinguished individual, at this time sufficiently jealous of the exercise of executive patronage, and greatly alarmed by what he conceives to be the tendencies of this Government to centralism and consolidation. It may be found in the report of the Secretary of War, communicated to Congress in 1819.

Mr. Pierce, afterwards President Pierce, quotes with approbation the suggestion of Col. Williams in a report to Mr. Jefferson in 1808:

—that the plan should be large enough to take not only minor officers, “but also any youth from any of the States who might wish for such an education whether designed for the Army or Navy, or neither, and let them be assessed to the value of their education, which might form a fund for extra or contingent expenses.”

These are the true doctrines upon this subject; doctrines worthy of the administration under which they were promulgated, and in accordance with the views of statesmen in the earlier and purer days of the Republic. Give to the officers of your army the highest advantages for perfection in all the branches of military science, and let those advantages be open to all in rotation, and under such terms and regulations as shall be at once impartial toward the officers, and advantageous to the service; but let all young gentlemen who have a taste for military life, and desire to adopt arms as a profession, prepare themselves for subordinate situations at their own expense, or at the expense of their parents or guardians, in the same manner that the youth of our country are qualified for the professions of civil life.

I am far from desiring to see this country destitute of a Military Academy; but I would have it a school of practice, and instruction, for officers actually in the service of the United States; not an institution for educating, gratuitously, young gentlemen, who, on the completion of their term, or after a few months' leave of absence, resign their commissions, and return to the pursuits of civil life.

There has already been expended upon the institution more than three millions, three hundred thousand dollars. Between 1815 and 1831, thirteen hundred and eighteen students were admitted into the Academy; and of all the cadets who were ever there, only two hundred and sixty-five remained in the service at the end of 1830. Here are the expenses you have incurred, and the products you have realized.

When the War of Secession broke out, and graduates of the Academy then in the army,—like many other Southern men, in the civil service of the United States, imbued with the political doctrines and sympathizing with the domestic institution, on which the War was based—sided with the political leaders of their several states, the opposition to the institution took another direction. The record of the War silenced these objectors. According to Gen. Cullum's *Biographical Register of the Graduates of the Military Academy*, out of 1,249 graduates living at the beginning of the Rebellion, 99 in civil life and 184 from the army, joined in the war against the United States. Three-fourths remained faithful. Of 821 graduates in the Army at the time, 184 (about one-fifth) joined in the Rebellion. Of the 99 in civil life all but one were residents in slave territory. Of 350 graduates who were born in or appointed from slave States, 162 remained loyal. Of the 292 loyal graduates in civil life, at the date of secession, 115 re-entered the Army—all below the age of 45, except those who were disabled for active duty, and most of these served in civil capacities. One-fifth of all the graduates who served in the battles of the Rebellion, one-fifth laid down their lives, and more than one-half were wounded in defence of the flag.

AMERICAN LITERARY, SCIENTIFIC, AND MILITARY ACADEMY.

AT NORWICH, VERMONT.

THE AMERICAN LITERARY, SCIENTIFIC, AND MILITARY ACADEMY, at Norwich, Vermont, was opened on the 4th of September, 1820, by Capt. Alden Partridge, and continued under his personal superintendence and instruction, assisted by several professors, until April 1st, 1825, when it was discontinued at Norwich, and reopened at Middletown, Connecticut. The catalogue of the officers and cadets published August, 1821, contains a prospectus from which we make extracts to exhibit the aims of that school and of this particular class of institutions at that date.

TERMS OF ADMISSION.

The requisite qualifications for becoming members of the Institution are the following, viz: That the candidate be of good moral character, that he be able to read and spell correctly, to write a fair, legible hand, and work the ground rules of arithmetic.

COURSE OF INSTRUCTION.

Young gentlemen destined for a college education, can be prepared at this seminary for admission into any college or university in the country, either as freshmen, or one or two years in advance, and in the mean time will be enabled to acquire a good military and practical scientific education. Young gentlemen also, destined for the navy, can here be instructed in the scientific part of their profession, and at the same time, obtain a correct knowledge of fortification, and of military operations generally, on land, which it is believed they would find highly useful in future life. Parents and guardians who are desirous of placing their sons or wards at this seminary, are requested to state whether they wish them to go through with the full course of education; and if not, to specify, particularly, those branches to which they desire them to attend, and also to mention their ages.

The course of Latin, Greek, Hebrew, French, and English languages, Arithmetic, the construction and use of Logarithms, Algebra, Geometry, Plane and Spherical Trigonometry, Planometry, Stereometry, Mensuration of heights and distances by Trigonometry, and also Geometrically, practical Geometry generally, including particularly Surveying and Leveling, Conic Sections, the use of the Barometer, with its application to measuring the altitudes of mountains and other eminences, Mechanics, Hydrostatics, Hydraulics, the elements of Chemistry and Electricity, Optics, Astronomy, Navigation, Geography, including the use of Maps and the Globes; Composition, Logic, History, Ethics, the elements of Natural and Political Law, the Law of Nations, Military Law, the Constitution of the United States, and of the states severally, Metaphysics; Agriculture, Permanent and Field Fortification, Field Engineering generally, the construction of Marine Batteries, Artillery duty, the principles of Gunnery, a complete course of Military Tactics, the attack and defense of fortified places, Castrametation, ancient Fortification, the ancient modes of attacking and defending fortified places, the ancient Tactics, particularly those of the Greeks and Romans, with a description of the organization and discipline of the phalanx and legion; Book-Keeping, Music, Fencing, Military Drawing, Topography, Civil Engineering, including the construction of Roads, Canals, Locks, and Bridges; Architecture.

The Hebrew and French languages, Fencing and Music will not be considered as comprised in the regular course of education, and consequently those who attend to them will be charged separately.

MILITARY EXERCISE, AND DUTIES.

The students will be regularly and correctly instructed in the elementary school of the soldier, and also in those of the company and battalion; they will likewise be taught the regular formation of military parades, the turning off, mounting, and relieving guards and sentinels; the duties of officers of the guard, officers of the day, and adjutants; the making out correctly the different descriptions of military reports; in fine, all the duties incident to the field or garrison. The military exercises and duties will be so arranged as not to occupy any of the time that would otherwise be devoted to study; they will be attended to at those hours of the day which are generally passed by students in idleness, or devoted to useless amusements, for which they will be made a pleasing and healthful substitute. Practical scientific operations will be frequently attended to, which will conduce equally to health and improvement.

The students will be required to sleep on mattresses, or straw-beds; no feather-beds will be allowed in the establishment.

For the purpose of giving to the students a military appearance, when engaged on military duty, and also on a principle of economy, they are required to wear a uniform dress, a description of which is hereunto annexed. In prescribing a dress, it has been endeavored to combine as far as possible, cheapness and a neat military appearance, with such a form as, while it leaves the student the free and unrestrained use of his limbs, will at the same time encumber him the least possible. The discipline will be strict, but correct; and particular attention will be given to the full development and due cultivation of all those liberal, manly, noble and independent sentiments which ought to characterize every American, whether citizen or soldier. The strictest attention will be given to the health, manners and morals of the students. They will be continually under the personal inspection of the superintendent, who will bestow upon them all that care and attention which it is believed their parents, under similar circumstances, would bestow.

MILITARY LECTURES.

For the accommodation of gentlemen, (particularly of those holding commissions in the volunteer corps and militia,) who may not wish to go through with a regular course of military studies and instruction, and also for the purpose of diffusing military science more generally, Capt. Partridge will deliver annually at the before-mentioned seminary, three courses of public lectures; the first course to commence on the second Monday in May, the second course on the second Monday in July, and the third course on the first Monday in October, annually. These lectures will embrace the following branches of military science and instruction, viz. :—

1st. Permanent and field fortification, the construction of field works generally, and also of marine batteries.

2d. The attack and defense of fortified places.

3d. The use of artillery, with a general exposition of the principles of gunnery.

4th. Military Tactics.

5th. Garrison and field service of troops, embracing particularly their police and rules for turning off, mounting and relieving guards and sentinels, and also for guard duty, likewise castrametation.

6th. General rules for the attack and defense of a province or country embracing an exposition of the principles of base lines of operation.

7th. Rules for the inspection and review of troops.

8th. A summary of ancient fortification, and also of the ancient modes of attacking and defending fortified places.

9th. A summary of the ancient tactics, particularly those of the Greeks and Romans.

10th. A description of some of the most celebrated battles and sieges, both of ancient and modern times, for the purpose of practically illustrating the principles explained in the lectures. In order to render the lectures on fortification perfectly intelligible, plans will be prepared, on which the several parts of a work will be clearly and distinctly exhibited.

Particular attention will be given to a full explanation of all the technical terms used in fortification, as well as in the other departments of military science. A full course will comprise about twenty lectures; five to be delivered in each week until the course be finished. The terms for attending a course will be ten dollars. Gentlemen subscribing for two courses, will be allowed ever after to attend gratis. All those attending the lectures, will be entitled, during the time of such attendance, to practical military instruction, and also to the privilege of the reading-room, without any additional charge.

On the 1st of April, 1825, Capt. Partridge was induced by liberal overtures from citizens of Middletown, Conn., to leave his institution at Norwich, and remove to Middletown, Conn., and reopen it in that city. Before doing so he published a card in which he exhibits the progress and results of his labors at Norwich.

This seminary was opened at Norwich, in the state of Vermont, on the 4th of September, 1820, under my immediate direction and superintendence; and although the plan was new and untried, besides containing principles, which were by many considered discordant with each other, viz., the connecting of mental improvement with a regular course of bodily exercise, and the full development of the physical powers, the whole conducted under a military system of discipline; still its success has exceeded, rather than fallen short, of my most sanguine expectations.

The following extract from a recent report of the adjutant of the institution, compiled from the rolls and other authentic documents, will enable the public to form their conclusions, from facts on this subject.

1st. The total number of cadets who have joined the institution, since its organization, is 480.

2d. The numbers from the respective states, and other sections hereafter mentioned, are as follows, viz. :—

From Maine,	28	From South Carolina,	45
Massachusetts,	89	Kentucky,	2
New Hampshire,	57	Georgia,	7
Vermont,	115	Ohio,	1
Connecticut,	33	Louisiana,	4
Rhode Island,	10	Mississippi,	5
New York,	40	Missouri,	1
Pennsylvania,	15	Michigan,	2
New Jersey,	6	District of Columbia,	2
Delaware,	2	Lower Canada,	2
Maryland,	4	Havana, Island Cuba,	1
Virginia,	1	Island Scio, Greece,	1
North Carolina,	7		

3dly. Of the above number, twenty are commissioned and warrant officers of the U. S. Navy, viz., 4 lieutenants, 1 assistant-surgeon, and 15 midshipmen.

4thly. Out of the whole, 441 have been engaged in the study of the Mathematics, and out of this number 145 have completed a full course of "*Hutton's Mathematics*." Of these, 80 have, in addition, attended to practical Mathematics, 56 have continued their course through the study of Philosophy, and others are now fast progressing in the accomplishment of those higher branches also.

5thly. The whole number who have studied the Greek and Latin languages, is about 150. Of these, 25 have advanced far towards completing a course, although none have gone entirely through. Of those not included in the last-mentioned number, many have fitted for college, or progressed still farther, and many are progressing. What is here considered a course, is the same which is laid down in the prospectus, which could be scarcely completed in the period since the establishment of the institution.

6thly. The number of those who have attended to the French language, is about 130. Twenty have become well acquainted with the language—30 are very well advanced, and many of the remainder have made respectable progress.

7thly. About ten or twelve of those who have been, or are now members of the institution, have devoted considerable time and instruction of the militia or volunteer corps, in this and various other sections of the country, and many of them are still engaged in that useful employment.

Of those who have been, or are now, engaged in the study of the Latin and Greek languages, I flatter myself there are several who would not suffer by a comparison with any of the same degree of advancement at our older and most approved seminaries; and as a school of practical science, I have little hesitation in asserting, that it is second to none in our country. In confirmation of this assertion, I would observe, that since the establishment of the seminary, my pupils, in addition to their usual exercises in practical geometry, and many operations of minor consequence, have executed, in a very handsome manner, a profile of the country, exhibiting the perpendicular altitudes of all the prominent points, above tide water, as determined by actual observation, from the summit of Manchester mountain, in the state of Vermont, to the summit of mount Washington, the highest elevation of the White Mountains, in the state of New Hampshire, a distance of 165 miles. They have also executed a similar profile from Norwich to Whitchall, in the state of New York, a distance of sixty-eight miles, and

have further executed a trigonometrical survey of the country around Norwich, for a distance in some directions, of about twenty miles. This survey was commenced, and has been prosecuted, in such a manner as to serve as a basis for any further operations that may be thought necessary. A handsome topographical plan of this survey is finished.

In the department of French, it is believed, the pupils have made as rapid progress as at any seminary in our country, and in Mineralogy, Botany, &c., although but recently commenced, there appears to be much zeal, and a corresponding improvement, amongst the classes which have attended, and those still attending, numbering about sixty.

Music and fencing have been attended by a large proportion of the members, and with a progress highly creditable to them.

The military exercises and duties are common to all the cadets, and it is believed very few have left the seminary, who were not competent to instruct from the elementary drill of the soldier, to embrace the school of the battalion, and who, in addition, did not possess a very competent knowledge of the principles of the grand tactics, of the elements of permanent and field fortification, of the principles of gunnery, &c. The beneficial effects of the regular system of exercise and active duty, to which my pupils are subject, upon their health, has been fully equal to my expectations. But one death has happened at the institution, since its commencement; and this was a youth who had just entered his name on the rolls, but was attacked by a prevailing epidemic of which he died, before commencing his studies or regular duties. Several who joined the seminary feeble and debilitated, have in a short time been entirely restored to vigorous health. Indeed, such has been the result, I believe, without a single exception. That a youth may, by means of a regular system of exercise, preserve all his bodily activity and vigor, and at the same time apply himself most assiduously to study, I have never had any doubts; but if I had, the facts developed since the establishment of this seminary, would have dispelled them. Many of my pupils, and those the closest applicants to study, walk with facility forty miles per day. In the summer of 1823, several of them left Norwich at day-break in the morning, walked to the summit of Ascutney mountain, and returned to Norwich about 9 o'clock in the evening of the same day—the whole distance forty-six miles; which, considering the fatigue and difficulty of ascending and descending the mountain, (upwards of 3,000 feet high,) may reasonably be estimated as equivalent to sixty miles on the usual roads of the country. They continued their regular studies and other duties the following day. In September, 1823, a party of nearly thirty accompanied me on a pedestrian tour to the summit of Manchester mountain, in the state of Vermont, a large portion of whom traveled 150 miles in four days, and on the fourth day one of the party, a youth of sixteen years of age, walked by my side forty-five miles. On a recent excursion to the summit of the most elevated of the White Mountains, with a party of fifty of my pupils, a large portion of them, on the last day, walked forty-two miles. Belonging to this party, was a youth of but twelve years of age, who walked the whole distance, (160 miles,) carrying his knapsack, with clothes, &c., and returned in perfect health.

Since the latter part of June, 1821, the cadets, as a military corps, have executed, under my personal command, six military marches, amounting, in the aggregate, to 637 miles. Different detachments from the corps have also, within the same time, in addition to several of minor importance, performed, under my personal direction, four pedestrian excursions, for practical scientific purposes, amounting in the aggregate to 684 miles, and which, added to the former, gives $637 + 684 = 1321$ miles. To this may be added an excursion to the White Mountains, whole distance 170 miles, by a party which I did not accompany, and which will make the total distance traveled in those marches and excursions, 1491 miles.

The foregoing facts are stated for the purpose of illustrating and confirming the correctness of the opinion I have so often advanced in my lectures on education, relative to the practicability, and even facility, of combining the full development and perfection of the physical powers of youth, with a due cultivation and improvement of the mental faculties. Whether a young man, who enters on the grand theater of active life, with a mind and body equally vigorous and improved, who, while he has a head to conceive, possesses also an arm to execute, will or will not possess advantages in the discharge of the various duties he may be called upon to perform, over one, who has grown to the age of manhood, puny and debilitated, destitute of physical energy, and incapable of bodily exertion, I shall leave to the sound discretion of the American people to decide.

As it respects the effect of the system on the morals of youth, I would observe, that I feel confident no one has left the institution worse than he joined it, and that I flatter myself, several have, in this respect, been improved. Next after the influence of religion, I consider habits of industry and economy as constitut-

ing the surest basis of morals amongst youth. To instill these into the minds of my pupils, ever has, and ever will be, a leading object; and I consequently shall imperatively require the strictest adherence to all the regulations bearing on those points, by all concerned. I would therefore beg leave to assure the parents, guardians, and relatives of my pupils, that the regulations prohibiting the cadets being furnished with money, otherwise than by the superintendent, or by his express permission, is to be taken in its literal meaning, (without exception,) and must be adhered to under all circumstances; and that any deviation from it will be followed by immediate dismission. I would much prefer that the great body of my pupils should enter young, and grow up under my system. The mind and body are then more susceptible of improvement, than at a more advanced period. Few, if any, vicious habits have then been formed, and the morals, under a strict and regular discipline, may easily be preserved. It is my fixed determination not, knowingly, to admit any young man of confirmed vicious or dissipated habits into the institution. I would accordingly recommend to parents and guardians not to send me any of this description; for if they should gain admission, and did not immediately reform, (which seldom occurs when the habits are confirmed,) it would only eventuate in their dismission, and consequent disgrace. It is much easier to prevent a youth from acquiring bad habits, than to correct them after they are acquired. If parents and guardians will send me their sons and wards free from habits of dissipation, immorality, and vice, I will guarantee, as far as human agency will authorize, that they shall be preserved free from such habits, while they remain under my care. Every requisite means will be used to correct the foibles and faults incidental to youth—to accomplish this object no pains will be spared. With their foibles I will bear as much as any person, but with their vices I will make no compromise. For the purpose of enabling me the more readily and the more certainly to accomplish this important object, I must request parents and guardians, if their sons or wards have foibles or faults, frankly to state them to me. On this subject there should be no reserve; as, with such information, I should know much better what course to pursue with them.

The favorable view taken of the aims, progress, and results of the scientific and military training provided by Capt. Partridge in his Academy at Norwich, was amply justified by the success of his pupils at Middletown, as practical men in various departments of business and public life.

On account of the condition on which he held a portion of his property at Norwich, Capt. Partridge was obliged to maintain there a literary institution, after his removal to Middletown. When he discontinued his labors at the latter place, and not succeeding in his plans for establishing a scientific and military school in the neighborhood of New York, he returned to Norwich, and in 1832, made preparation to reestablish his Academy on its old basis, and with enlarged premises. With this view he erected the building known as the North Barracks, which were occupied for two years by Rev. Amasa Buck, for the purposes of a Methodist school, known as the Franklin Seminary.

NORWICH UNIVERSITY.

In the spring of 1834, a number of gentlemen associated to establish at Norwich, not an academic, but a collegiate institution, after Capt. Partridge's views, and in the autumn of that year, obtained from the Legislature of Vermont, a charter by which the petitioners were constituted a Board of Trustees of an institution by the name of the *Norwich University*. The charter further provides "that the said Board shall be required to furnish at said institution constantly a course of Military instruction, both theoretical and practical, and also in Civil Engineering, and the practical sciences generally; and the President of said institution, with the consent of the Trustees, shall have power to give and confer all such diplomas, degrees, honors, or licenses, as are usually given or conferred in Colleges or Universities, at their discretion; provide, however, that in so doing they shall have respect to the morals and merits of the candidate alone."

This act of incorporation named fourteen gentlemen, and provided for the election of eleven others, which twenty-five should constitute the Board of Trustees of Norwich University. The first meeting of the Trustees was held at Norwich, Vt., January, 1835. The vacancies in the Board were then filled, and the first members of the Faculty were elected, viz.:—ALDEN PARTRIDGE, "President and Professor of Moral and Intellectual Philosophy, History, Science of Government, Political Economy, and Military Science and Tactics;" TRUMAN B. RANSOM, Vice-President, and Professor of Natural and Experimental Philosophy, Mathematics, Theoretical and Practical, and Civil Engineering; M. NORAS, Professor of Ancient and Modern Languages; and FRANKLIN MARSH and I. M. HORN, assistants in the English Department. These gentlemen were authorized to form a course of study and laws for the government of the institution.

In May, 1835, the University was opened under the auspices and in the buildings owned by Capt. Partridge, with a full course of literary, scientific, and military studies. Among those enumerated in the first prospectus were Military Law, Military Drawing, Civil and Military Engineering. "Military Science being considered an important appendage to the education of every American youth is taught theoretically in all departments of the University. The military exercises are attended at those hours of the day which are generally passed by students in idleness or devoted to useless amusements; for which they will be made a pleasing and healthful substitute." "The discipline will be strict, but correct; in principle, military. It will be a great and leading object to instill into the minds of students liberality of sentiment and principles of honorable integrity and attachment to our republican institutions. Everything of a sectarian character in religion will be entirely excluded and all literary honors will be conferred in accordance with scholarship and moral worth alone."

At the close of the academic year, 1835-6, (August 18, 1836,) the first Annual Commencement took place, and the class of 1836 then graduated, consisted of one person, Alonzo Jackman, now Brigadier-General in Vermont, and Professor of Mathematics, Military Science, etc., at the University. Professor Ransom, entered the United States Navy about this time, and Mr. Jackman was appointed to fill the vacant Professorship. Soon after this, Rev. Zerah Colburn, succeeded Professor Noras. August 17, 1837, the second Annual Commencement was held, and Hon. George McDuffie, of South Carolina, delivered the address; the next year Robert Rantoul, Jr., of Massachusetts, was the orator; in 1839, John Wentworth, of Illinois, and Thomas H. Seymour, of Connecticut, were speakers; and in 1840, Benjamin F. Hallett, of Boston. The catalogues of each of these years show that the number of students, or cadets, averaged a little less than a hundred, and in all the catalogues, the regulations for the Police of the Cadets' Quarters were given in full. They provided for all the military duties of the students, for the wearing of uniform, etc., etc.

In July, 1840, the Corps of the University under the command of Captain Partridge, performed a military march across the State to Fort Ticonderoga. They were just a week on the excursion, and in that time, they marched nearly a hundred and fifty miles on foot, about twenty-five miles per day. Notwithstanding the excessive warmth of the day, and the exposure to the air of the night, with no other covering than the soldiers' blanket, the Cadets all returned in good health and spirits.

During the year 1843, several changes took place in the University. From

the time Mr. Ransom resigned the Vice-Presidency, until May, 1843, that office was filled by Hon. Aaron Loveland. Mr. Ransom returned at this time, and was again made Vice-President, and Professor of Civil and Military Engineering, etc. The buildings and land used up to this time, were the property of Capt. Partridge. During May, arrangements were made for the purchase of this property by the University, but some misunderstanding occurred before this was done, and in November, President Partridge resigned, and took from the armory all the arms and accoutrements, attempted to revive his old Academy in another part of the village, and finally, when the University could not purchase his property at his prices, obliged the students to remove from the buildings. On his resignation, Truman B. Ransom was chosen President, and for the two years the institution was carried on in other buildings in the town. The Legislature was applied to, and appropriated a hundred stand of arms, sets of accoutrements, etc., for the use of the students. At last an arrangement was made with Capt. Partridge, for the purchase of his property, and the University returned to its old quarters. The number of students was small during these difficulties, but the military department was always active, a good military education was given, and men were graduated who now hold responsible places in the military service of the United States among the Federal troops.

In May, 1847, President Ransom, then Major-General of the Vermont Militia, resigned his place at the University, accepted that of Colonel of the "New England regiment," ninth infantry, and went with that body to Mexico. September 13th of the same year, he was shot while gallantly leading the charge of his regiment upon the fortifications of Chapultepec. When Gen. Ransom left, Prof. James D. Butler was appointed President, *pro tem.*, and in January, 1848, Gen. Henry S. Wheaton, of Massachusetts, was elected President, and served as such till August, 1849; he was succeeded in September, 1850, by Rev. Edward Bourne, LL. D., who still (1863,) holds that office.

Soon after 1850, the opposition to anything of a military education became very strong, the number of Cadets at this institution diminished, and the tone of the prospectus changed to suit the public. "The discipline is military in principle and form. The Cadets are under military organization, they dress in uniform, are regularly drilled with arms. But they are not made lovers of war! They are not found to adopt the profession of arms more than others of the same age, however educated; oftentimes the harmless practice of handling arms at this age, is found to satisfy the craving for the use of them, and these young men settle down into the ranks of peace more easily and more contentedly than those that have had no such training. The drill is an agreeable exercise. The system of discipline is strict, though not oppressive, its sole object is to preserve order and promote study." "The object is not to make soldiers, but to strengthen the body." During these years (from 1850 to 1860,) the prospects of the University were not bright. It was at once engaged in lawsuits, and troubled with debt and opposition. In 1853, it was proposed to move the University to Montpelier, but the project was finally abandoned, the last of the old Academy property was bought, the buildings were repaired and the institution freed from debt. Previous to 1850, the finances were in a very confused state. When the charter was obtained, land to the value of fifteen hundred dollars was brought and deeded to the University. The sale of this, and subscriptions from Trustees and citizens of Norwich, produced enough to purchase the North Barracks.

The money received of students for tuition was always, and is still, all used for paying the salaries of the instructors. The room-rents scarcely paid the rent and repairs of the South Barracks, and the University ran slightly into debt. The State, in 1853-4, gave the institution about thirteen hundred dollars of an unappropriated school fund, and enough more was raised by friends of the University to purchase the South Barracks, and pay off old debts, and put all the buildings in good repair. For several years it was obliged to struggle against a load of popular prejudice on account of its military feature, but since 1861, it has brushed up its uniform, and its Military Department no longer seeks to hide itself. No such semi-apologies for the military training of its students appear in its catalogues and prospectus for 1861 and 1862.

"The Norwich University differs from most colleges in two respects. These are its double system of study, consisting in an Academic and a Scientific course; and its department of Military Science. The Academic course comprises those studies usually pursued in other colleges; the Scientific embraces Mathematics, Natural Sciences, Belles-Lettres, Surveying, and Engineering. Four years are required to complete the former, and three, the latter course of study. Students are also allowed to take a partial course in either department. The students of all departments are regarded as equals.

"The feature, however, which more than any other distinguishes Norwich University from other Collegiate institutions is the department of Military Science and Tactics.

"Agreeably to the provisions of its charter, the students are all under Military discipline—are called Cadets—dress in uniform, and are instructed in Infantry, Rifle, and Artillery Drill, Bayonet Exercise, Fortification, Reconnoissance, Cambramétation, Guard and Out-Post duty, &c., &c. All the arms and equipments necessary for drills are furnished by the State of Vermont. * * *

"The military feature of this institution is one which should particularly commend it to the notice, and patronage of the public at this time. The want of men skilled in Military Science and Tactics, to take command of volunteer forces, and discipline them into effective soldiers, has been severely felt in organizing the present army of the United States. The reverses with which it has met are, without doubt, owing largely to this cause. To guard against this defect in the future, it is now generally felt that young men should be educated thoroughly in every department of Military Science. In times of peace this knowledge would not incapacitate men for nor interfere with any other business;—while in times of war, it would become invaluable to the country in training an army for efficient service."

The following persons constituted the Faculty in 1862. Rev. EDWARD BOURNE, LL. D., President, and Professor of Moral Sciences, Ancient Languages, and Literature; ALONZO JACKMAN, A. M., Brigadier-General Vermont Volunteer Militia, Professor of Mathematics, Natural Philosophy, Military Science, and Tactics; THOMAS R. CROSBY, M. D., Professor of Anatomy, Physiology, and Natural History; CLINTON S. AYER, A. M., Acting Professor of Natural Sciences; GEORGE BAILLARD, Professor of Modern Languages, and Linear and Architectural Drawing; SAMUEL W. SHATTUCK, B. S., Tutor in Mathematics and Military Tactics; ALONZO JACKMAN, A. M., Librarian.

MILITARY ELEMENT IN SCHOOLS OF ALL GRADES.

INTRODUCTION.

IN all ages and in all countries there have been educators who recognized the importance of the physical, and more specifically, of the military element in their schemes of individual and collective teaching. No higher authority in English pedagogical literature of the liberal type, can be named in this connection, than John Milton, who, in his brief but masterly outline of "a virtuous and noble education," includes this in the means of a complete and generous culture, that is "to fit a man to perform justly, skillfully, and magnanimously all the offices, both private and public, of peace and war." In the outset he demands that the number of pupils, for whose accommodations a spacious house and grounds were to be provided, should be large enough for "the convenience of a foot company or interchangeably two troops of cavalry," so that systematic exercise could alternate with the studies and diet. In his general programme he includes studies which shall "stir up their spirits to manly and liberal exercise," and "inflame their hearts with high hopes of living to be brave men and worthy patriots." In the enumeration of studies he specifies mathematics, the practical aid of instruments in surveying and engineering, and their application to fortification and navigation. Living in the midst of a civil war like our own, when the preservation of constitutional liberty had summoned troops from the field, the shop, and the study, and placed men in command who had not been trained to the profession of arms, Milton directs or points out the value of studies, the mastery of whose general principles "may at some time or other save an army," and not let the healthy and stout bodies of young men rot away under them for want of this discipline, which is a great pity, and no less shame to the commander." In treating specially of physical culture, Milton assigns to military drill, and use of sword and other weapons, at least an hour and a half each day, that his pupils may be equally good both for peace and war. "The exercise which I commend first is the exact use of these weapons to guard and strike safely with edge or point. This will keep them healthy, nimble, strong, and well in

breath; is also the likeliest means to make them grow large and tall, and to inspire them with a gallant and fearless courage, which being tempered with seasonable lectures and precepts to make them of true fortitude and patience, will turn into a native and heroic valor, and makes them hate the cowardice of doing wrong." With the use of the sword Milton would associate all athletic sports "wherein Englishmen are apt to excel." And after the day's study has been thoroughly done, "with minds in good tune and satisfaction," he would occupy the "two hours before supper in military motions, under sky, or cover, according to the season, as was the Roman wont; first on foot, then as their age permits, on horseback to all the art of cavalry; that having in spirit, but with much exactness and daily muster, served out the rudiments of their soldiery in the skill of embattling, marching, encamping, fortifying, besieging and battering, with all the helps of ancient and modern strategema, tactics, and warlike maxims, they may, as it were, out of a long war come forth renowned and perfect commanders in the service of their country. They would not then if they were trusted with fair and hopeful armies, suffer them for want of just and wise discipline to shed away from about them like sick feathers, though they be never so oft supplied; they would not suffer these empty and unrecruitable colonels to quaff out or convey into secret hoards the wages of a delusive list and miserable remnant. No, certainly, if they knew aught of that knowledge which belongs to good men or good governors, they would not suffer these things." To these school studies and practical exercises, Milton would add excursions "to all quarters of the land, learning and observing all places of strength, all material for building, all soil for towns and tillage, harbors and ports of trade. These ways would try all their peculiar gifts of Nature, and if there is any secret excellence among them, would fetch it out and give it fair opportunities to advance itself by."

The views of Milton in favor of military exercises can not be attributed to any professional bias, for his tastes and his habits of life were in the shaded walks of the academy, "contemplating the serene countenance of truth in the still air of delightful study."

The example of Switzerland can be cited on the side of their practicality, on a scale as liberal and much more popular than their author at the time contemplated; and quite recently (1871), the Federal war authorities propose that the older boys in the secondary and superior schools shall be instructed in outpost and skirmishing duties.

PHYSICAL AND MILITARY EXERCISES IN PUBLIC SCHOOLS.

A NATIONAL NECESSITY.

BY EDWARD L. MOLINEUX.

Major and Inspector in New York Militia.

FROM a long and unexampled period of political and commercial prosperity we suddenly find ourselves called upon to struggle for national existence, and while a noble response from the people to the necessity of the struggle has strengthened the hand of government with an intelligent army, and developed the resources of the country, yet the occasion has laid bare defects which call for correction.

Without a standing army of any magnitude we have found our militia laws defective, and have been obliged to create ourselves a military people by the sufferings and bitterness of an experience bought on the field of active warfare.

Military necessity has compelled the loss of invaluable time in the organizing and preparing of our troops, which would not have been required had we been able to meet the rebellion at the commencement with well trained officers and an experienced and carefully drilled militia.

"*The first object*," says Daniel Webster, "*of a free people is the preservation of their liberty*:" a noble truth which must speak home to the heart of every American, and if, as it is asserted, "the future life and character of a nation is to be seen in its system of schools," then we may well listen with some degree of alarm to the warnings and unmistakable evidences by which we are surrounded, that the American race is physically deteriorating.*

The question arises, has our National system of Education been such as to qualify and prepare us to maintain successfully, the noble inheritance which was won by the physical energies of the men of the Revolution, and with our success in the field of intellectual culture, have we kept the physical advantages possessed by our forefathers?

Let us not mislead ourselves in this matter, but calmly look at the facts, that as a rule, our present system of Public Education is devoted *solely* to the mental and moral improvement of the scholars, and that the encouragements and rewards held out by committees and teachers, stimulate to the overexertion of the brain, and sacrifice in too many instances, the health and growth of the body.

Although great improvement has been made of late by the shortening of the time devoted to study, and by the introduction of more frequent periods of recreation, yet still little has been attempted for giving exercise and activity to the body; this important training being left to the care of parents or the pupils themselves.

* Miss C. E. Beecher's "Appeal to American Women," "Calisthenics," &c.

Is it not too true that the increase of ill health, broken constitutions, and early deaths, among the growing portion of our population, especially in cities, warns us, year after year, that the thirst for knowledge, and the restless seeking after mental and intellectual improvement, have been bought at the expense of the vital energies of the great body of youth who throng the colleges and public schools of our land? *

If any one denies this, let him visit our institutions of learning, and while he may well admire the wisdom and forethought which has established our prosperity on a noble system of National Education, he can not but notice the debility evinced in the frames of so many youthful votaries of intellectual training; the exceptions making the contrast still more strikingly painful. Then let him go to the counting-house or the close confinement of some mechanical employment, where the evils from mental activity, unaccompanied by physical recreation, are yet more strongly developed. These evils assail not only the happiness of families, but the prosperity of the nation and the well-being of the race. Is this right or necessary? Can it be avoided?

The solution of these momentous questions may well engage the serious attention of the reflecting teacher, parent and patriot; and to them we assert that, *unless physical exercises are enforced upon our system of Public School education, our intellectual culture will be of little avail, and that our nationality stands in danger of sinking a prey to designing opponents.*

That enfeebled races are invariably conquered by those more powerfully developed, is proved by innumerable instances in history. That physical training was an important branch of education among the Greeks and Romans, is well known. The system inculcated by the iron-hearted Lyncurgus, among the Spartan youth, was of a nature admirably adapted to fit them for all the sterner realities of life, whilst the athletic games and exercises of the youth of Rome, comprising, as it did, walking, running, wrestling, swimming, and military drill, were the means of improving, to the utmost, their physical powers. Upon reaching manhood, the advantage of this training was indicated by the robustness of form, and the constitutional vigor which enabled them to undertake labor, fatigue and hardship of every kind, with perfect indifference.

The Spartan and the Roman soldiers were by this early training, not only qualified to surmount with ease the various obstacles and difficulties incident to a state of active warfare, but they also became gifted with precision and rapidity in every movement, and each man was likewise endowed with that confidence in himself, and that unbounded reliance upon order, subordination and combined action, which nourish audacity, yet temper it with coolness and steadiness.

Unfortunately this system, by which the vigor and valor of a Spartan or a Roman has passed into a proverb, fell into disuse, and as it was neglected for more intellectual pursuits, so the grand empires founded by its vigor crumbled before the assaults of more athletic barbarians.

The influence of health upon the faculties of the mind is acknowledged by all, and yet how few in this country devote attention to those all important exercises which are necessary to the preservation of health, and without which intellectual power can not be applied to its highest use. The talents, the expe-

* [We do not share this alarm, or believe that hard study, apart from open or secret vice, has had much, if any thing, to do with such physical deterioration as does exist. — *Ed. Am. Jour. of Ed.*]

rience of our best educators of youth, are taxed to devise exercises to develop the *mental* faculties, forgetting that too close application to study is detrimental to the growth of the body

But few thoughtful teachers will deny the extent to which this evil has reached, or be unwilling that the strain upon the intellectual powers of children, by absorbing studies, should be counteracted by cheerful and relaxing exercises by which the mind will be relieved and at the same time strengthened. The testimony of physicians, the valuable works on health by Dr. Warren, Miss C. E. Beecher, and many other able writers, furnish incontestable evidence of the necessity of systematic exercise for children. To accomplish this it is absolutely necessary to adopt it in our course of education, for in the majority of cases it can not, or will not, be attended to at their homes.

What then is the most simple, feasible and useful plan to adopt for physical exercises in our Colleges, Normal and Public Schools?

We unhesitatingly say, that the only successful, orderly, and systematic method is, *to engraft them upon the course of studies during school hours, and to carry it out under strict military discipline*; the exercises being such as are best suited to the age, strength and capabilities of the pupils, namely: calisthenics and walking for the girls and younger children, and *military exercises* for the elder boys.

Let not the kind hearted parent exclaim against his boy learning the military drill, for fear of his acquiring a taste for warfare; or the lover of peace imagine we would re-establish the stern laws of Lycurgus. We would have moderation in this respect as in mental studies, and while we would not, as some may imagine, displace the bust of Howard in our school rooms for a Napoleon, yet we would impress upon the minds of boys the image and example of Washington, and in cultivating their intellectual faculties, likewise prepare them in mind and body to develop in manhood those virtues and powers which constitute a true and noble citizen;—a sincere love of country, of national probity and justice, beyond selfish considerations or personal aggrandizement. They should be brought up to a sense and knowledge that it will be their honorable duty and privilege to protect their native land, that she fosters and educates them in their youth, and that upon their manhood her nationality depends.

We can never become an aggressive military people; the fields for successful enterprise in art, science, commerce and agriculture, are too broad and inviting to render military pursuits very attractive, and unless we cultivate such exercises and discipline in youth, they will be, as they have been, neglected when engaged in the active pursuits of business. The clear, common sense of the American parent will acknowledge, not only the national necessity, but the moral advantages of this; for what fond mother is there but would prefer to see in her son a manly, patriotic spirit, rather than a timid, mercenary one, which, shunning danger, would sacrifice the honor and greatness of his country to the base love of gain and ease.

We have suggested that the exercises be conducted under strict military discipline, because it is impossible for a large body of children to be exercised in the usual school limits, unless the greatest decorum and order is observed; and if conducted under the supervision of a teacher, dangers and accidents will be avoided, which always occur when children are rash and thoughtless in attempting to accomplish too much. Thus conducted, they will prove an

invaluable aid to the teacher in the enforcement of discipline in the school room, and teach that invaluable lesson which it seems so difficult for children to learn,—unhesitating obedience.

For the advantages of this system let us examine the practical testimony afforded in the European schools, where considerable attention has been paid to this important matter.

On the continent the advantages of physical training are appreciated to their fullest extent, especially in the Industrial Reform schools, where the admirable principle has been adopted of teaching "what they will have occasion to use when they become men,"* and thus render them useful members of society. To Dr. Barnard's National Education in Europe, we are indebted for the following extracts and illustrations of this position.

In the Reform School of Rauben Haus, near Hamburg, "they are taught to develop their bodily and mental powers in various practical ways; to use the fire engine, to swim, to save persons from drowning, and use remedies to recover them, to climb a mast and handle the sail, of a ship. They act as a jury among themselves. Their chief reward is to be enrolled in the table of honor. In the great fire of Hamburg, their conduct was physically, as well as morally, heroic, and while bravely saving life and property, they steadily refused rewards." Parents who, perhaps justly owing to the numerous accidents in Gymnasiums, are timid of their children becoming injured by these exercises, should carefully read the system pursued in Fellenberg's celebrated establishment at Hofwyl. "A great variety of exercises of the body and the senses are employed, so that every boy shall acquire a knowledge of his physical strength, and attain confidence with regard to those efforts of which he is capable, instead of that foolhardiness which endangers the existence of many who have not learned to estimate their own powers correctly." At Ruysselede, Belgium, the following plan was pursued: In summer, from 5½ to 6½ A. M., Exercises and Manœuvres; from 7½ to 8½ P. M., Gymnastics. In winter, several hours were devoted to these exercises, and the result found (as in this report,) was, that "rickets, scrofula, want of elasticity in the limbs, difficulty of walking, all rapidly disappeared under the drill, which confirmed the health and increased the strength and activity of the children, and accustomed them to discipline. It predisposed the pupils to sleep, and was an effective safeguard against shameful habits and secret vices. The battalion movements were performed with as much precision as that of the army, a platoon armed with condemned carbines, marched at the head. The bayonet exercises and skirmishing were as good as play to the boys." A remarkable instance of the moral effects of military discipline upon the lads of the *Colonie Agricole*, at Mettray, is related by M. Demetz, and was published in Barnard's Journal, Vol. 1, p. 623. "During the revolution of 1848, a band of workmen came to Mettray, with flags flying and trumpets sounding, and meeting the youths returning, tired from field labor, their pickaxes on their shoulders, thus addressed them:—'My boys, do not be such fools as to work any longer. Bread is plentiful; it is ready for you without labor.' The *chef*, who was conducting the boys, and who behaved with the greatest calmness and tact, immediately cried, 'Halt! form in line.' The lads, being accustomed to march like soldiers, immediately formed. The *chef* then

* Aristippus.

said to the men, 'My friends, you have learned to labor; you have a right to rest, but leave these lads; let them learn now, and when their turn comes they may rest as you do.' The men gave way, the youths marched home, and Meltray was saved,—saved, as I believe, by our habit of military discipline." It was the heroic exertions of these young *colons* during the inundation of 1856, which won for them the praises of all France. These instances might be multiplied, but are sufficient to show the moral and physical benefits of military exercises and discipline upon boys, even of the lowest class.

The governments of Europe being upheld by the bayonets of large standing armies, and requiring, as they do, in many of the kingdoms, the compulsory service of all young men, renders it unnecessary for the daily public schools to teach military exercises to that extent, which it is well for our Republican government to do. Yet in Europe they watch with the greatest assiduity and care the bodily powers of the children, knowing its great advantage not only in health, but the maintenance of order.

In Great Britain much interest has of late been evinced on this subject, and Mr. Edwin Chadwick becoming convinced that the studies and confinement in their schools were generally prolonged beyond the powers of the children, and in violation of the laws of health, devoted himself to collecting testimony respecting the advantages of the military drill upon the health of children. His investigations have elicited much valuable information, the more interesting to us as they mark its advantages to a nation which, like our own, depends for its defence mainly upon a volunteer force.

The following synopsis of his pamphlet we extract from the N. Y. Evening Post, November 1st:

Mr. Chadwick considers "In a sanitary point of view that a systematized drill is good, and for defective constitutions requisite for the correction of congenital bodily defects and taints, with which the youth of a very large proportion of the population, especially among the poorer town populations, are affected: and that for these purposes the climbing of masts, and other operations of the naval drill, and swimming, are valuable additions to the gymnastic exercises of the military drill, and when properly taught are greatly liked by boys. From a moral point of view, also, this drill will give the pupil an early initiation into all the acquirements of discipline—namely, duty, order, obedience to command, self-restraint, punctuality and patience."

The evidence furnished by English drill officers shows its national value, and "That at school it may be taught most economically, as not interfering with productive labor, and that thirty or forty boys may be taught the naval and military drill at one penny farthing (two and a half cents) per week per head as cheaply as one man, and the whole juvenile population may be drilled completely in the juvenile stage, as economically as the small part of it now taught imperfectly on recruiting or in the adult stage; and that, for teaching the drill, the services of retired drill sergeants, and naval as well as military officers and pensioners, may be had economically in every part of the country.

That the middle and higher class schools should have, in addition to the foot drill, the cavalry drill, which the parents of that class of pupils may afford.

That the drill, when made generally prevalent, (without superseding,) will eventually accomplish, in a wider and better manner, the objects of volunteer corps and of yeomanry, which, as interrupting productive occupations now

becoming more absorbing, is highly expensive, rendering all volunteer forces dependent in fitful zeal, and eventually comparatively inefficient; that the juvenile drill, if made general, will accomplish better the objects even of the militia; that the juvenile drill will abate diffidence in military efficiency, and will spread a wide predisposition to a better order of recruitment for the public service, will tend to the improvement of the ranks of the regular forces, whether naval or military, and will produce an immensely stronger and cheaper defensive force than by the means at present in use or in public view.

And, finally, that the means of producing this defensive force, instead of being an expense, will be a gain to the productive powers and value of the labors of the country."

Lieutenant-General Shaw Kennedy, in a letter expressing his high approval of the plan, states, "that the inferences drawn can not be controverted. He is of opinion that if the measure is carried out it will be the means of bringing two million of men actually under arms in Great Britain alone, that is, excluding Ireland. He conceives that the effects of military drill and exercises, and the use of fire-arms taught at schools, would never be forgotten; that a youth so trained would, at any future period, with a slight degree of practice, renew his knowledge of what he had been taught."

Nor has the training of a better class of seamen been neglected. This is of vital importance to the well-being of a commercial people, and it is well for us to see what steps England is taking in the matter.

"For the purpose of giving instruction in the naval drill, old masts and tackle have been obtained for some of the training schools in England, and Mr. Taffnell has received expressions of satisfaction from naval men of the way in which some of the boys have by these means been tutored as seamen in pauper schools. In order to form sailors, it is necessary to have masts and sails rigged in the playground, and a regular seaman must be engaged to drill the boys.

Mr. Baker has observed that the naval drill as given at Greenwich, is highly effective. "He states that he was on board the *Ganges* and the *Conway* at a time when many boys came on board who had been taught the naval drill at Greenwich naval schools; and that they proved to be as ready and well trained as man-of-war's men; they were clean and orderly, and as a class were first-rate seamen, becoming petty and warrant officers in greater proportion than others."

Of its consequence upon the national health and industry, "Professor Owen has stated that even in the best-warmed and ventilated schools, five or six hours' enforced stillness of growing children is a violation of the primary laws of physiology; whilst Miss Nightingale and others agree that, under the present system, children are placed under conditions which impair good bodily health and generate epidemic disease. Mr. Rahmson, a school commissioner at Amsterdam, states that the physical evils attendant upon the present amount of sedentary confinement in schools, required from young children, is beginning to attract attention in Holland, and that they have under trial a system of exercises for schools advocated by Dr. Schrieber, of Leipsic. 'The chief question,' says the latter gentleman, 'is, How are our children to be brought up? Is it according to the laws of nature? The answer is, No; or we should not see so many children who were rosy and healthy before going to school, become pale and bloodless after school has begun;' and he prescribes the limitation of the hours of school confinement.

Mr. Robert Rawlinson, civil engineer, gives the following as his opinion of the advantages of school drill in connexion with manual labor:

"In my opinion, based on experience and observation, I think school drilling and training would prove of the utmost consequence to the boys in after life. I may give a few instances. In all engineering and building, tradesmen are frequently required to use their strength in concert, lifting, carrying and drawing; men, to use their joint strength not only effectively but safely, must have confidence in each other. Two trained men will lift and carry more easily and safely than four untrained men. I have frequently seen trained men weed out unskilled men where heavy lifting has been required, because they dare not risk the danger arising from unskilled strength, and few have performed with more safety work which would have been lighter and easier if all had been equally skilled. Men frequently reject the assistance of unskilled men, as there is absolutely danger in having them near. Frequent accidents arise from using men unskilled in lifting, in hoisting, and at capstan work. * * * Boys should not only learn to march, but to lift, carry and pull in concert. There are many necessary feats of strength in all trades, which are more matters of knack and tact than of brute strength. Brute strength frequently fails to do that which comparative weakness can accomplish easily with skill and confident concert. There is no regular system of training in concert to use human strength in the best manner in any trade, so far as I know; acting in concert is a matter of necessity, and practice gives facility and confidence. Drill and training would probably double the effective human power of any establishment, especially if numbers are instructed in joint feats of strength. That which is taught to youth is never forgotten in after life."

"As regards its fitness as an appendage to the highest branches of education, we have the testimony of experienced examiners at the University of Oxford, England, who state that six hours mental work, instead of ten or twelve, for adults, was the time of the great majority of the prizemen; and it was always found that those who were the foremost in mental labor were commonly the foremost in boat-rowing and physical exercise. The Vice-Chancellor of Oxford testifies that the institution of the systematized exercise of the volunteer drill in that college had been attended by an improvement of the mental labors, and of the whole of the order and discipline, as well as of the health of the University; and that, encouraged by these results, he was considering of making provision for cavalry exercises."

Mr. Chadwick has also furnished incontestable proofs of the absolute necessity of more active physical training for females and of its bearing upon the future welfare of the race. But this subject has been rendered so familiar to American readers by the able pen of Miss Catherine E. Beecher, that we need not touch upon the European view, except to say that the noble labors of Professors Ling and Branting, of Sweden, have been ably seconded by very many of the governments of Northern Europe, where a method of gymnastics for females, has been systematized and practically adopted. From this brief sketch of the practical working of physical military exercises in Europe, let us turn to what has been accomplished among our own countrymen, whose activity in behalf of public education called forth the compliment from Prof. LeRoy, which we wish was better deserved, especially by the class which he specifies.

that "the improvement of schools is, so to speak, the fixed idea, the constant preoccupation of the statesmen of America."

We have indeed a noble and liberal system of education, but we would see its fostering care so extended as to invigorate the bodies as well as develop the mental faculties and intellectual powers of the pupils. The military exercises would best accomplish this, and at the same time form our public schools into a NURSERY FOR A BRAVE AND EFFECTIVE MILITIA.

Early in October last a communication was addressed by the writer to the different governors, and various other persons connected with the executive departments of the Northern States, in regard to the advantages to be derived from the introduction of infantry drills in the public schools, and by early preparation in school-days to strengthen the militia of the different States. At the same time it was placed before the New York and other City Boards of Education, and referred by them to special committees. The subject was also agitated through the columns of the daily press. The warm responses which have been accorded to these communications, prove the deep interest which is felt in this important matter, and it is to be hoped by the time this article appears in print,* some legislative action will have been taken.

In New York, the energetic Judge Advocate General, William H. Anthon, being engaged in a report upon the militia laws, and taking a warm interest in all matters relative to the efficacy of the militia, thus speaks of the importance of some alteration in the present system, in a letter addressed to Mr. Curtis, President of the Board of Education in the city of New York:

"The entire system, in my judgment, needs revision and reform, in order to make the militia what the Father of the Republic intended it should be.

It has been suggested by several persons, and among others Col. Richard Delafield, U. S. A., and Maj. E. L. Molinoux, that an excellent foundation for an improved militia system would be the introduction of 'The Manual of Arms,' and 'The School of the Soldier and of the Company,' into our public schools.

I am disposed to consider these suggestions as valuable, and shall feel obliged to you if you will, as early as may be convenient, inform me how far you deem them practicable, and how they may be most conveniently introduced into the institutions under the charge of your Board."

Mr. Curtis, whose personal observations on the European school systems, and whose long experience at the head of the Educational Board of the largest city in the Union, renders his views of the greatest value, replied:

"It has been my opinion for years that military instruction should, under certain restrictions, and to a certain extent, be given to the older boys in all the schools and institutions that are supported or draw funds from the public treasury. It is but just to the State whose munificence sustains these schools, that the pupils should be instructed in those branches of knowledge that will make them useful and effective in defending and protecting the State. A well organized militia, receiving from year to year into its ranks the disciplined and instructed youth who have passed through the public schools, and to whom the duties of the soldier are familiar, will always be sustained by the public confidence and esteem."

* Written December, 1861. Recommended by Governors Andrew and Morgan in their messages in January

Military discipline and exercises are by no means an untried experiment in the annals of American education; some of our best private schools and institutes having long since adopted it, and with a good degree of success as it will be our endeavor now to show.

To the admirable regulations of our National Military and Naval Academies, we need not refer; the systematic course pursued by them for the development of health, for discipline of mind and body, being well known to the majority of our readers.

One instance which came under the writer's personal observation, will sufficiently illustrate the dependence which can be placed upon well-drilled boys in case of emergency.

In April last, when Washington was defenceless, Baltimore in riot, and all Maryland in a state of revolt, communication being cut off at Annapolis, there was great fear of attack upon that important strategic point. The pupils were prepared for any exigency, and slept with their loaded rifles over their cots. At an alarm of a night attack, there was no hesitation among those gallant little fellows. They were up directly; fell in their ranks and off at a *double-quick* for the point of danger, in an almost incredible short space of time. The elder boys dragged their howitzer with them. Had an attack taken place, those pupils would have given a good account of themselves and have stood their ground with courage and steadiness. The secret of this is the *discipline*, for which they are indebted to the assiduity of their brave and experienced superintendent, Captain Blake of the Navy.

Let us read the opinion of this able officer in respect to the applying of this *discipline* to public schools:

"My experience at this institution long since impressed me with the importance of this subject, and I intended to have given my views publicly, but you have left nothing more to be said upon it, and I can only hope that those who have the control of our public schools will view the subject as we do. We have received about a hundred and forty acting midshipmen this year, some of them very young, and although they have not been here two months, they present a beautiful example of such results as the system would produce all over the country."

It must be acknowledged that the States now in rebellion have devoted much more attention to military instruction in special schools, than we have, many of them pursuing the European plan of State Academies devoted to military science. Thus while we have been obliged to *create* officers from the small nucleus afforded us from West Point, they have had the students from State Colleges to officer their regiments.

For a long time back Virginia has annually expended upon her Military Institute nearly \$50,000; South Carolina, \$30,000; Kentucky and other States have likewise institutions, founded in whole or part, upon a military basis.

Although several attempts have been made to obtain legislative action for similar institutes in the Northern States, they have not, up to the present time, been successful, owing, we think, to the groundless opinion that it would prove a heavy tax, without a corresponding advantage. We shall endeavor to prove in this article how economically an academy could be supported. It is, therefore, to private enterprise, we are indebted for any experiments which have been made in this respect.

Several of our best boys' boarding-schools in this portion of the country have for a long time employed a military instructor for the pupils and been managed on a semi-military organization; they have been well sustained by the patronage of the public. We instance two or three schools of the present time.

Dr. Russell's Collegiate and Commercial Institute of New Haven, is one which has already been of national advantage to us, for according to Prof. Daniel C. Gilman, "the scholars were of great service in drilling the recruits of Connecticut at the outset of the war, and many of them now hold important posts in the army. The scholars formerly trained as infantry and are now at artillery practices." Mr. Gilman very justly observes, that in a country like ours with no standing army, every able-bodied man should learn to bear arms, and there can be no cheaper or efficient way of doing this than by teaching boys in schools.

The Eagleswood Collegiate and Military School, near Perth Amboy, N. J., has been recently organized on the military plan. The scholars are formed into a battalion under a superintendent and colonel commanding, the rest of the officers being taken from the scholars. The State of New Jersey has supplied the institute with arms, and the military regulations apply to the conduct of the pupils in their general deportment. The reasons given for employing this discipline are the same that apply in every instance, that it is the most orderly and effective, increases the energy, vigor and manly attitude of the boys, and induces cheerful obedience.

To Major J. P. Prall, Military Instructor, we are under obligations for the following account of Mr. Tracy's *Military Boarding School, at Tarrytown, N. Y.*:

"There is no question, in my mind, of the utility of military instruction in schools, and if I had any doubts, they would speedily be removed by the fact that the very exigency you propose to provide for is being developed, only in a less degree, in the volunteer army now fighting our country's battles. There are a number holding honorable positions in the army of the Potomac, and elsewhere, who have more particularly come under my own observation, that have passed through a course of similar instruction to what you propose, in private military boarding schools, who give evidence of superior knowledge as soldiers, and with a little preparation were ready to assume the duties and responsibilities of the field and camp. They have more particularly distinguished themselves as drill masters and thorough disciplinarians, the very ground you proposed to cover in your articles in the N. Y. Tribune of Nov. 20. I have especially noticed, of late, the facility with which youth acquire military knowledge since the outbreak of the rebellion, when the occasion seems to impress them more strongly with its importance.

Independent of the military availability of youth thus instructed, the promptness and precision that the system induces is apparent. A simple sketch of the routine of duties in a school over the military department of which I have the supervision, may give an idea of its utility, as well as its usefulness. This department is conducted in such a way as to make the military feature an auxiliary to the classical and preparatory. Part of two days in each week is more especially devoted to military drill and instruction, when the flag is raised on the flag-staff on the parade ground with the roll of the drum, and the sunrise gun is fired. At sunset it is lowered with the same ceremony by a file of boys, in charge of an officer, or non-commissioned officer. On other days of the week

a drill of about an hour is held, in command of the company officers,—always in presence of the Principal. The utmost strictness is required in all the military features. The "Assembly," when beaten for drill or parade, occupies one minute—*immediately* after, "*fall in*" is given by the orderly, when *entire* silence is required. Boys being naturally playful, much more care in these particulars is necessary than in grown persons. *Tattoo* begins at 9 o'clock precisely, when the minute of its duration expires every cadet is required to be in line for "roll call," and the three squads, each in charge of an officer, are marched by flank to their quarters, (the whole not occupying more than two minutes.) They halt opposite their beds, and salute their officer as he passes out;—in five minutes the lights are extinguished. Their clothing is uniformly arranged, and in such way that if called up at night they can dress without lights and without loss of time. The officer in command of each, being held responsible for the condition of his squad. The military instructor inspects at unexpected times, and directs the chiefs of squads to report the result to the officer of the day, through whom all reports to the Principal must be made at 9 o'clock A. M. each day. *Reveille* at day break, and they march by squads to wash room, where twenty minutes is allowed for necessary ablutions, blacking boots, &c., and then the march to the Assembly-room for "*roll call*." Inspection of boots twice a week, at unknown times.

The squads for the *mess-room* march in order, filing each side of the tables, face inward, and "*sit down*" by command; *rise*, march out and *break ranks*, observing the same military precision. These various duties are performed with pleasure and pride by the cadets, and the same promptness and regularity is apparent in every movement.

The *armory* and arms are in charge of a detail of four, and are inspected in turn on the roll, each week, and reports are made of disabled pieces, and the general condition of the arms and armory, to the officer of the day, and through him to the Principal. The various reports are embodied into one, by this officer, so that the Principal is not burdened with the details unless he calls for them.

Orders are issued from time to time, by the Military Instructor, and engrossed in a book, which is open for inspection of visitors, announcing promotions, results of inspection, and noting cases of military merit and demerit, &c. This has a tendency to stimulate to exertion, and to efforts to avoid unfavorable notice.

Military classes 1st, 2d and 3d, graduated according to military merit are established, and promotions to them made after strict examinations. All company officers are selected from the 1st class.

A class of Honor, consisting of members of the First class who have escaped being reported for disobedience and improper conduct, is also formed. A given number of military demerits reduces a cadet, and the badge which is worn on the left breast is taken from him. He may, however, be reinstated.

Military demerits are punished by military penalties.

Cadets are taught to observe the position of the soldier when off duty also; the benefit of this is very marked. When the machinery is properly set in motion, the labor generally attending the minutiae of school duties is greatly reduced, and much more pleasantly and thoroughly performed.

I have not entered into all the details, (and have given the military only) but enough to give a general idea of the plan adopted by this school. There are

different modes in use in other schools. Some partaking more of the military, and some less. I think there is danger, often, of *too much* military being engrafted so as to make it burdensome; great care should be taken in this particular, as the cadet wearies of it when the novelty is past."

Mr. N. W. Taylor Root, in his admirable book on School Amusements, furnishes practical testimony "that it fosters habits of promptness, exactness, and unanimity of action; teaches implicit obedience to commands, erectness of carriage, a neat and clean appearance, and a gentlemanly and respectful behavior."

It will thus be seen that a system of military drill has been tested morally and physically, in private schools, and found of decided advantage.

Why should these benefits be denied to the pupils of Public Day Schools?

Why should this vast defensive power be lost to the Government?

As a national military necessity; as a protection to the health and constitutional vigor of American youth; and as a powerful agent upon their moral behavior, their energy, self-reliance and spirit of enterprise, let **PHYSICAL TRAINING BE ENGRAFTED ON THE COURSE OF STUDIES FOR ALL THE PUPILS EDUCATED AT THE EXPENSE OF THE STATE.** Let us not hesitate at the magnitude of the undertaking, for it is a *necessity*, and under proper regulations and restrictions can be successfully and economically accomplished.

The greatest difficulty to be surmounted is the successful working of a system at once applicable to the requirements of a small district school, with a limited number of scholars, attending only at certain seasons of the year, and of those of the larger cities, with numerous schools, in which a great number are under instruction.

Let us commence at the foundation, in the Primary Schools.

The moment the child enters the school care should be taken that the mental exercises which are given should be relieved by frequent intermissions for running and playing, under the supervision of the teacher. This we are glad to say is the case in very many of our best primary schools; but it is when the child becomes more advanced, when there are lessons to commit to memory at home, that some simple physical *exercises* should be taught him every day; exercises calculated to develop the growth and expand the muscles. The calisthenics recommended in Miss Beecher's work are excellent, simple, and easily fitted to the limits of the school house. The report of Mr. W. H. Wells, Superintendent of Public Schools for Chicago, for 1860, gives some interesting particulars of simple exercises which have been attempted in that city.

There would be but little difficulty experienced in selecting movements and gymnastics suitable for the strength and ability of the classes of younger boys and girls under instruction, provided the method was established as an imperative duty which *must* be regularly put in practice, and that no lack of interest on the part of teachers, or laziness of the pupils would be accepted as an excuse for non-compliance with the regulation. We trust if Physical Training is carried out in our system of education, that a carefully prepared Manual of all kinds of exercises, embracing the military drill, will be compiled for the use of schools; in a word, a text-book to which our teachers can turn with confidence to find exercises suitable for all classes of pupils.

From the Girls and Primary, we pass to the Boys Grammar departments, for

* Such a Manual will soon be published by J. B. Lippincott & Co., Philadelphia.

which we propose military exercises, as being the most economical and advantageous for public schools; for *tactics* manœuvre large bodies in a small space, in an orderly manner, whereas gymnasiums are too expensive, and can not be made large enough to accommodate many scholars at once. This opens to us our most difficult, but at the same time most useful, field for prompt and energetic action.

Suppose we take for an example one of our large cities. The lower and female departments having simple physical exercises in use, it is wished to introduce military exercises into the grammar schools. Let us see how simply it can be organized, and how far it is possible to extend these studies if desired.

The following interesting letter from the Mayor of Bangor, will show the movement in that city, an example well worthy of being imitated.

CITY OF BANGOR,

Mayor's Office, Dec. 21st, 1861. }

DEAR SIR:—In reply to yours of the 19th inst., I would say that, upon my recommendation, through a communication I made to our City Council, on the first Monday of the present month, an Order was passed directing the military drill to be introduced into a portion of the Public Schools of this city.

I had given the subject some thought and investigation, and was prepared to recommend the adoption of the drill for the physical training, no less than for the military instruction it might impart. The prevalent idea that education consists in training the intellect only, is gradually becoming superseded by the more rational theory that true education consists in training the moral and physical, no less than the intellectual faculties.

For the physical training of boys, I think the military drill has much to recommend it besides the military instruction it imparts. It will tend to give them a better command of their muscles, and impart a manly gait and bearing. It will also, if properly conducted, teach them self-control, and give them true ideas of order, discipline, and subordination, and whilst it will relieve them from the monotony of their ordinary studies will, by a grateful change, enable them to return to them with renewed interest.

We are entering upon the new experiment with caution, and have commenced by devoting an hour, twice a week, to the drill. We began in the school rooms, but found, after a few lessons, that the space these afforded was too small, and for the present shall use the large Gymnasium Hall. In summer, the grounds in connection with our school houses may be found well adapted for the purpose.

The boys, with scarcely an exception, manifest much interest in their drills, and receive the instruction much more readily than men. Two or three of our public spirited citizens, well qualified for instructors, have generously consented to devote the necessary time for drilling the boys, for the present winter, without compensation.

Some of our teachers are also disposed to qualify themselves for drill masters, and we are thus enabled to try the experiment without much expense.

I have had no communication with Gov. Washburn in relation to this subject, and was quite unaware of your interest in the matter. I however noticed the article in regard to it in the Evening Post of Nov. 8th, and was gratified with the important facts which it contained. I shall be glad to receive any further

communication you may make to the public on this important subject, and should you wish, will be pleased to communicate to you the further progress of our experiments.

Yours respectfully,

ISAIAH STETSON, Mayor

EDWARD L. MOLINEUX, Esq., New York.

To establish thoroughly and economically this military culture, the Board of Education should appoint some competent person as Chief of the Staff to organize and carry out a system of instruction and drill; he to have under him two or three assistant instructors of experience, under whose guidance *a teacher, or teachers from each school*, should be fully instructed in the tactics, so as to be able to superintend the drill of the boys, which should always take place during school hours, and thereby form a recreation from mental study, and not encroach upon their play time. These are the only persons connected with the department beyond the scholars themselves, as it should be managed on the principle of obtaining *the whole working force* of the military organization from among the pupils.

The grammar department of each school should be formed into a company, or where the size of the school rendered it necessary, two companies; the officers to be selected from the most deserving and competent boys.

The officers thus selected to be instructed theoretically and practically by extra drills, in their respective duties. This would not occupy much time, and any boy objecting to devote this time would not be worthy of holding his position, and should be replaced by some one more deserving. Every school should possess within its limits space for a parade ground and for a few simple fixtures for gymnastic exercises. In stormy weather the exercises could be carried on indoors; for the drill possesses the advantage of affording exercise to a great number in a *small space* without disturbance and noise.

No uniform would be required, and the only expense would be the loan or purchase of 500 or 1000 short muskets, which could be used in turn at the different schools for drill or parade. A simple musket can be manufactured very cheaply, which will answer for all purposes.

The care and cleaning of the arms, the escorting and carrying them from school to school, or point to point, as required, should be the military duty of the pupils; thus expense will be saved, and the duty of prudent soldiers to take care of their equipments and do their own work inculcated.

These different school drills, always in charge of the teachers, should be visited in turn by the instructors, who would exercise a close and careful supervision over them.

Every ten companies or schools should be formed into a regiment, officered by those selected as the most capable, and who had passed the necessary examination.

Occasionally on Saturdays the regiments, in rotation, should be exercised by the instructors, in battalion movements, field manoeuvres, skirmish drills, camp duties, &c. These Saturday exercises should not be compulsory, but would be eagerly looked for by the boys as an amusement.

In the proper seasons they could be marched to the suburbs for their exercises, and thus a pleasant holiday, with healthy amusements, be given them un-

der proper guidance. Any father will appreciate the advantages of such exercises and enjoyment to his boys.

In the summer season it should be found out which of the boys could not swim, and had no parents able to teach them. All such should be classed together, and means taken to instruct them in this most requisite art.

If found desirable to teach them to move together in *large masses*, (in which our militia are certainly deficient,) it can be accomplished by organizing two, three, or more regiments, into a brigade, to be commanded by the chief instructor, he selecting for his *staff* the most intelligent of the scholars who could relieve him of much of the labor which the systematic working of this large military department would render necessary. Thus those assigned to the staff would be learning the technicalities of the department and the duties of aids, secretaries, &c.

These staff officers, and any other of the pupils who showed a decided talent, should be assisted in acquiring knowledge in the military science by means of lectures, &c., from the chief instructor. An orderly system once organized, with the incentive to improvement by promotion for correct deportment, and of military disgrace for ungentelemanly and unsoldierly conduct, would soon render this military instruction of great assistance to *teachers in the schools*. Let the boys understand that disobedience or improper behavior debarred them from military honors and the whole tone of their conduct would be improved.

Of the exigencies of this war, if complicated by foreign interference, it is impossible to foresee, but every one is aware of the importance of early training upon the destinies of nations, and but few will deny the value of a well-trained battalion of selected elder boys, in case of *INVASION* or trouble, by their relieving the fatigue of regular troops in mounting guard at the least exposed positions, at the camps, on baggage, or for convoys; likewise to act as drill-masters for the recruits.

The above plan, which was submitted to several Boards of Education last fall, was offered as being the best adapted for *immediate use*, and is therefore provided for the instruction of the *teachers*. If, however, the *Normal Schools and Colleges* would provide systematically for this instruction, it would be far better as they are the proper fields for *permanent benefit*, as each graduate would there become fully prepared to instruct in these exercises in the public schools.

The views of the Hon. Joseph White, of Massachusetts, respecting military studies in colleges, are well worth noting. He says, "let the drill be regular and compulsory, taking the place of the very irregular and insufficient physical exercises now taken, and our colleges would be vastly improved in their educational power, and the commonwealth would in a short time have a numerous body of educated men well skilled in the military science and art, who will become teachers in our lower grades of schools and in our military companies and associations, and be competent when the alarm is sounded, to lead our citizen soldiers to the field." New Jersey has just offered a noble example by making an appropriation for military instruction in her State Normal School.

But we must look at the practical working of physical and military training in small district schools. Of necessity they are far behind, in intellectual culture, those in the cities, and owing to the small and uncertain attendance, physical and military drill would also have to be simplified. The duties of a country

life are such as not to render these exercises so necessary on the score of health, nor are the pupils wearied by such constant application to study. But low beneficial it would be in smoothing the rough, clownish manners of the country pupil by teaching him the *position of a soldier*, and correct *walking*. In respect to this, it should be the duty of the trustees to see that the drill was taught as far as practicable to the boys (calisthenics to the girls) by the teacher himself, who, if he were not already instructed from a Normal School, would find but little difficulty in mastering the details of tactics sufficiently for his purposes. With as small a number as twelve boys, company and skirmish drills could be taught; the latter is admirably suited for country schools, and would be a delight to the boys. If near the water they should be taught to swim.

It is thus we would teach our public school boys when they reach a certain age, to act together as citizen soldiers and be prepared when called upon, to do yeomen service in the country; to make it their pride as well as their duty, to defend the Country and State which so liberally educates them, let us cultivate in them a lofty and noble patriotism, which shall have its effect upon future generations, for it is upon these qualities, their intelligence and enterprise, aided by *physical strength and health*, that the *FUTURE* of our country depends.

Although a course of military training in the public schools would soon furnish our State with an intelligent class of soldiers and line officers, yet the *art of war* in many of its branches, such as artillery, engineering, &c., requires a scientific education, which can not be given in a private institution. Our colleges undoubtedly could, to a certain degree, supply this want. New York city possesses in its Free Academy a college which needs but the addition of two or three professorships to carry out in part this requirement, yet a *State Military and Scientific College* seems a necessity to which early attention should be given, but to prevent its becoming a tax upon the State, it should be managed somewhat upon the plan of the Polytechnic of France, namely, that pupils at large may be admitted upon passing an examination and paying the annual fee.

Offer inducements in the way of superior education and careful training, and sufficient income would be received from the *paying* scholars to cover the expense to the State. Thus, from this college, might annually graduate men educated for the most scientific and skillful pursuits of life, and who, in time of war, would richly repay the State for the care devoted to their culture.

As an incentive to the public-school boys, several of the most deserving should annually be sent to this college by the State, and to the National Military and Naval Academies.

There is yet another important matter to be considered in physical exercises for public education, more particularly in sea ports, viz., *Naval Training*.

A late report of the Shipmaster's Association has shown us that the reputation of our American vessels is deteriorating so rapidly, that unless something is done, quickly and effectually, to provide a remedy, foreign vessels will supersede ours in freighting. The necessities of our navy are too well known to need notice here, and surely these evils which assail the country at this trying moment of peril, should arrest attention.

In large seaboard cities the naval training school, which has worked so advantageously in England and Belgium, could be established very economically by the fitting up of some hall, at a slight expense, with spars, sails, &c. Here of an *evening*, lectures and classes for instruction in navigation and sea-

manship could be formed. This would be the means of improving our sailors and of forming useful citizens from those who now idle away their time around the streets and docks. The expense would be but light, and the advantages obvious to our merchant marine and navy. This would soon improve our class of sailors and officers, reduce the rate of insurance upon American vessels, and relieve us from the stain which is being cast upon us as a commercial and naval power.

The evening schools of New York city cost \$73,000 per annum; a small percentage of this sum would place in successful operation an *evening nautical* school, which would enable, in less than three months, American sailor boys to acquire sufficient knowledge of navigation to aspire to the quarter deck. The handling of heavy guns and the principles of naval gunnery could also be taught. If a war with Great Britain breaks out, are we to be found slumbering in this respect, and must we wait for the *first gun* before taking active measures!

We are a peace-loving and domestic people, and we have indulged in the delusive fancy that peace was to shine over us forever, until rudely awakened from our dreams by a formidable attack at the very foundation of our nationality. Every family circle is represented in that mighty army which is battling for the Union, and we know that much of the suffering caused to our brothers by this new and unexpected calling, is due to the defects of their physical education, and to the want of a sufficient number of well trained officers. But the war is upon us and we must meet it as may best become a free nation and be better prepared for the future.

It is the proud boast of England that in time of war she is "Ready, aye Ready," but a much prouder and nobler cry for us would be, the prompt "Here" at the roll-call of our militia when summoned, like the minute men of the Revolution, to the defense of the country. We want no large standing army. In times of peace let our merchants, artisans, farmers, and mechanics, enrich and develop the resources of the country. It needs their industry and will amply repay their toil. But let them be trained and educated from school-days to their military duties, and at the first note of war let that response of "Here" come cheerfully from our rich prairie lands, from our counting-houses, from our machine shops, from the decks of far off vessels and from our public schools,—one mighty cry of POWER and SELF-RELIANCE from a noble militia, possessing a thorough *knowledge of its duties*; intelligent and earnest in the right; patriotic and strong in its devotion to freedom.

A few words to those who fear the tendency of these exercises to instill a warlike and blood-thirsty spirit, and we will close. To them we say, we would emulate the ancients only so far as we can obtain from them some of their earlier and nobler traits of patriotism, courage, strength, endurance, and health. Let us picture what effect this training would have upon individual character.

Let us take the example of a young lad, entering the public school in the primary department, with perhaps a sickly, indolent disposition, and somewhat careless and slovenly in his appearance.

We know very well from the present system of studies, that his mind will be well cared for, and therefore pass to the effect of the physical training upon him.

The first lesson then is to stand in an erect and commanding attitude, with his chest well expanded, then his careless, slouching steps, with hanging head,

are soon changed to the brisk, smart *walk* of a young gentleman. Calisthenics and exercises proportionate to his strength, and tending to develop his limbs very soon improve his health and impart a youthful vigor and energetic purpose to his motions, which are so much to be admired in young lads and give such rich promise of the future manhood. He soon learns exact and unhesitating obedience, and is taught by precept and example, that no small advantage in appearance is to be derived from a clean face and well brushed clothes. Is it to be denied that he thus learns habits of order, activity and cleanliness, which will be invaluable to him in after years?

But his greatest ambition, the goal of all his hopes,—the reward for which he studies diligently, is active and neat in his deportment, docile and obedient to his teachers,—is to be promoted to the grammar department or higher classes, where the boys have military exercises. He looks with longing eyes at their neat, orderly ranks, as they form for drill or parade; their brightly polished shoes, neatly brushed clothes and well kept arms. All this is something to look forward to, and when he has accomplished it, has he not to strive by activity to win his *grade* and by self-control and obedience prove himself deserving to command others? Manhood, when it arrives, finds him bright, active, self-reliant and ready to become a public spirited member of society.

Let the necessity of military exercises be placed before the boy in a patriotic light and it will induce him not only to take greater care in the execution, but likewise implant a still greater love of country from the very knowledge that some day he may be of use to her,—of use to her in the pulpit, in the legislative forum, in the busy pursuits of industry and the various walks of life. And if the necessity again calls for action, or if the present war is of long duration and tests the strength and perseverance of our national character, let us not shrink from the ordeal, but with a firm reliance upon an Almighty God and a righteous cause, let us go forth in this good fight, we of this generation and our children, and faithfully discharge the duties of Christian soldiers in defense of truth, justice, and our country.

U. S. MILITARY AND COMMERCIAL MARINE SCHOOLS.

NAVY AND NAVAL AFFAIRS.

By the Constitution of 1789, Congress is empowered "to regulate commerce, to provide and maintain a navy, and make rules for the government and regulation of the land and naval forces." The initiatory steps for establishing and regulating a navy were taken by the Continental Congress in November and December, 1775. The management of naval affairs was first assigned to a Marine Committee of Congress, appointed Dec. 11, 1775, which in 1779 (June 9), was converted into Commissioners, and before the close of that year, into a Board of Admiralty, which consisted of five members, two of whom were members of Congress, with a secretary, who was appointed by Congress. In 1781 (Feb. 7), a Secretary of Marine was created to execute all the duties and powers of the Board of Admiralty. In the condition of the public treasury, and "in the dilatory and parsimonious action of the several States in forwarding funds for the construction of ships, docks, and naval arsenals, and for the support of the naval service," Congress voted in August, 1783, "that it was not advisable to purchase ships for the present."

The necessities of a disordered commerce, and of a sufficient naval force to protect the navigation of the country, and repel the first approach of a hostile army from abroad, were among the motives for establishing a more efficient federal government. But until the danger of war with England became imminent, a large party in the country, in and out of Congress, opposed the necessary appropriations for putting the Navy of the United States on a respectable footing.

In constituting the executive departments of the national government under the Constitution, the administration of the navy and naval affairs were committed to the War Department, where it remained till 1798, when (April 30) an Act was passed "to establish an executive department to be denominated the Department of the Navy."

The Act of March 27, 1794, by which the construction and man-

ning of four ships of 44 guns each, and two of 36 were ordered, was called for by the depredations on our commerce, and particularly in the Mediterranean Sea. In this Act the appointment of eight midshipmen, to rank with the warrant and petty officers, was authorized, and the Navy Register bears the names of only eight officers holding that rank prior to 1800. In 1801 the naval force of the United States consisted of 13 ships, viz.: 4 of 44 guns each (*United States*, *President*, *Constitution*, and *Philadelphia*); 4 of 36 guns each (*Chesapeake*, *Constellation*, *Congress*, and *New York*); 5 of 32 guns each (*Benton*, *Essex*, *Adams*, and *John Adams*); and by an Act of that year all others were ordered to be sold, and the completion of any more in the yards, was suspended. But the insults to our flag and destruction of our commerce by the Barbary powers, and the privateers of England and France, aroused such a feeling in the country that Congress ordered a squadron to be fitted out for the Mediterranean in 1803, which proved to be the school in which the seamanship of the Navy was trained, and the gallantry of its officers signally displayed. In the legislation of this period originated the "gun-boat" policy as an auxiliary means of harbor defense. In 1805 the first vessel of this class was added to the Mediterranean squadron, and in 1806 the President announced that 50 more could be relied on for the naval service. Gun-boats, properly constructed and armed, are now part of the system of harbor defense in all countries.

By an Act of Congress approved April 21, 1806, the whole number of able seamen, ordinary seamen and boys, for the United States Navy was not to exceed 925. March 3, 1807, the President was authorized to employ 500 additional, increasing the authorized number to 1,425. January 31, 1809, the President was authorized to employ 3,600 able seamen, ordinary seamen and boys, in addition to the number of petty officers, seamen, etc., previously authorized, which increased the number of enlisted men allowed to 5,125.

In 1810 an appropriation was made to test the value of torpedo or submarine explosives, as engines of war, and in 1842 to test the submarine battery ignited by a submerged electric wire, devised by Samuel Colt. The introduction of these "engines of war" into the defense of Southern harbors, in 1861-65, demonstrated their efficiency and inaugurated a new system of not only harbor defense, but of attack.

March 30, 1812, the President was further authorized to increase the seamen, etc., and as far as necessary to equip the frigates *Chesapeake*, *Constellation*, and *Adams*, any law to the contrary notwith-

standing. In this Act provision was made for the appointment of a schoolmaster to each ship having a complement of 12 midshipmen.

March 3, 1813, he was authorized to have built six sloops-of-war, and to have them manned and equipped, and to employ the number of seamen which were necessary for such vessels as were authorized by law to be put in commission.

In 1816, in the appropriation annually of \$1,000,000 for eight years to the gradual increase of the Navy by nine 74 gun-ships, and twelve 44 gun-frigates, provision was made to procure the steam-engines and build and equip three steam-batteries for the defense of ports and harbors—the introduction of a new element into the naval service. In 1839 the Secretary was authorized to construct three steam-vessels of war, “according to the best advices that could be obtained.”

In 1837, after strenuous efforts to enlist Congress in some systematic plan for supplying the navy with well instructed and thoroughly disciplined seamen, the Secretary was authorized to enlist under certain conditions, boys between the ages of 13 and 18, who should receive special opportunities for school and professional training.

In 1844, \$100,000 was appropriated to build at Pittsburg an iron steamer (the *Alleghany*); and the appearance and exploits of the *Merrimac* and the *Monitor*, in the waters of the Chesapeake, in 1863, introduced a new system of naval construction and armament, not only into our navy, but in less than ten years revolutionized the ship-yards and ordnance foundries of the world.

By Act of March 3, 1845, it was provided “that the whole number of petty officers, seamen, ordinary seamen, landsmen and boys, in the naval service, shall not exceed 7,500 at any one time during the fiscal year,” for which appropriation was then made.

By Act of March 3, 1857, the Secretary of the Navy was authorized to enlist 8,500 men for the Navy, instead of 7,500. During the late civil war the limitation of enlisted men was suspended; and in his annual report, December, 1862, the Secretary states the number of persons employed on board our naval vessels, including receiving ships and recruits, as about 28,000; and in his report of December, 1865, he says the number was increased to 51,500 at the close of the war, which in 1867 had been reduced to 11,900.

In 1864 the Secretary of the Navy revived the system of naval apprenticeship, which was inaugurated under the Act of March 2, 1837, but suspended because the favorable results anticipated from a fair trial were not realized at once, under various disadvantages of a new enterprise, and because Congress, in 1845, by limiting

the whole number of persons employed in the naval service, compelled the Department to discharge boys instead of men.

By Act of June 17, 1868, the number of persons enlisted into the Navy, including apprentices and boys, was limited to 8,500—a limitation actually below the maximum which existed prior to the war, and compelled the department to reduce the number of naval apprentices, and finally to again abandon that system.

The number of line officers is now (1871) limited by law to one admiral, one vice-admiral, 10 rear admirals, 25 commodores, 50 captains, 90 commanders; total flag and commanding officers, 177. To these are added 80 lieutenant commanders, 280 lieutenants, 200 masters and ensigns—making the total line officers of all grades, excepting midshipmen (309 including those at Annapolis), 737.

The medical staff consists of 180, viz.: 15 medical directors (captains); 15 inspectors (commanders); 50 surgeons (lieut.-commanders), and 100 passed assistant and assistant surgeons.

The engineers' department (total 250) includes 10 chief engineers (captains); 15 *do.* (commanders); 45 *do.* (lieut.-commanders); 100 assistants (masters and ensigns). There are 126 paymasters, 13 ranking as captains; 13 as commanders; 50 as lieut.-commanders. The number of chaplains is limited to 24, and of professors to 12.

Although, strangely enough, not under the administration of the Navy Department, the inauguration of the Coast Survey in 1807, and its thorough prosecution since 1844, when the employment of officers of the army and navy in the work was authorized; the recognition of the Naval Observatory at Washington city, and authorizing the making astronomical and meteorological observations, in the Act of August 3, 1848; the assignment of a competent officer of the navy to the preparation of the Nautical Almanac; the institution of the bureau of Hydrography and Ordnance, in 1842; the employment of three suitable vessels of the navy to test and perfect the plans of Lieutenant Maury in his investigations of the winds and the currents of the ocean, by Act of March 3, 1849; the concentration of the teaching staff of the corps of midshipmen preparatory for their examination at the Naval Asylum at Philadelphia, and their removal to separate accommodations at the old military station of Fort Severn, in Annapolis, by order of Secretary Bancroft in 1845, and the formal recognition of the institution as the Naval School, in the appropriations for the navy in 1847—these and other acts of Congress, and the action of the Department under them, are important data in the history of the Navy and Naval Education—especially of their scientific character.

GROWTH IN SHIPS, OFFICERS AND MEN.

The following Tables, prepared by Capt. George H. Preble, U. S. N., which are copied from the Army and Navy Journal for Nov. and Dec., 1871, exhibit in a condensed view the expansion of the military and merchant marine of the United States, from 1816 to 1871 inclusive, as well as its condition in each year from 1816.

TABLE I.—*Naval Vessels, Tonnage, Officers, Seamen, and Cost. Tonnage.*

Year.	Number of Vessels of United States Navy.	Number of Guns.	Tonnage of Vessels belonging to the United States Navy.	Total number of Navy Officers, including Midshipmen and Mates.	Total number of Petty Officers, Seamen, etc.	Total Expenditures for the Navy and Marine Corps.	Total Tonnage of U. S. Merchant Marine, Licensed and Registered.
1816.....	...	.....	40,032	8-6	unknown.	\$3,908,278	1,372,919
1817.....	111	1,567	39,642	934	.....	3,314,596	1,799,911
1818.....	115	1,363	39,662	948	.....	2,633,695	1,225,164
1819.....	90	1,243	36,519	926	.....	3,847,640	1,380,732
1820.....	88	1,284	38,057	805	.....	4,387,960	1,280,166
1821.....	96	1,017	33,851	876	.....	3,310,343	1,390,959
1822.....	98	1,047	34,413	848	.....	2,224,450	1,324,670
1823.....	45	1,085	36,039	812	.....	2,503,766	1,336,566
1824.....	49	1,132	36,338	843	.....	2,904,581	1,389,163
1825.....	44	1,107	36,174	836	.....	3,049,067	1,423,111
1826.....	46	1,104	39,577	830	.....	4,218,902	1,534,190
1827.....	49	1,163	42,709	877	.....	4,263,878	1,620,608
1828.....	53	1,343	44,149	898	.....	3,918,786	1,741,262
1829.....	52	1,315	40,253	906	.....	3,988,643	1,380,798
1830.....	51	1,267	40,835	1,051	.....	3,329,429	1,191,776
1831.....	50	1,269	41,953	900	.....	3,236,183	1,276,246
1832.....	52	1,292	42,147	967	.....	4,947,718	1,439,450
1833.....	53	1,272	60,002	1,022	.....	4,274,184	1,606,140
1834.....	53	1,272	67,804	1,012	.....	4,613,637	1,738,997
1835.....	53	1,272	66,479	1,035	.....	4,209,836	1,824,940
1836.....	51	1,969	66,281	1,044	.....	6,252,145	1,852,685
1837.....	55	1,982	69,043	1,048	.....	6,646,915	1,886,684
1838.....	55	1,982	69,253	1,104	.....	6,131,361	1,985,649
1839.....	56	2,022	71,306	1,157	.....	6,182,294	2,086,479
1840.....	62	2,106	74,776	1,171	.....	6,113,896	2,180,764
1841.....	67	2,106	73,418	1,222	.....	6,001,077	2,130,744
1842.....	60	2,044	73,835	1,222	.....	8,297,243	2,092,291
1843.....	71	2,022	77,031	1,403	.....	3,727,712*	2,158,069
1844.....	74	2,464	78,221	1,448	.....	6,496,199	2,280,095
1845.....	76	2,400	79,592	1,434	.....	6,297,178	2,417,092
1846.....	76	2,245	80,992	1,398	.....	6,455,014	2,562,084
1847.....	81	2,268	86,436	1,391	.....	7,900,636	2,639,046
1848.....	92	2,401	93,755	1,425	.....	9,408,477	3,154,042
1849.....	78	2,380	92,391	1,465	.....	9,786,706	3,334,016
1850.....	77	2,370	91,591	1,423	.....	9,704,725	3,535,454
1851.....	74	2,336	90,786	1,416	.....	8,880,582	3,772,430
1852.....	76	2,346	90,992	1,432	.....	8,918,842	4,138,440
1853.....	75	2,320	91,814	1,417	.....	11,067,790	4,407,010
1854.....	73	2,115	91,787	1,423	.....	10,790,096	4,802,902
1855.....	78	2,255	112,715	1,433	.....	13,327,095	5,212,001
1856.....	76	2,359	111,803	1,196	.....	14,074,835	4,872,652
1857.....	73	2,332	109,924	1,306	.....	12,651,695	4,940,846
1858.....	78	2,251	113,765	1,397	.....	14,053,365	5,049,806
1859.....	86	2,273	132,429	1,351	.....	14,600,927	5,145,038
1860.....	91	2,229	133,832	1,436	.....	11,514,850	5,353,869
1861.....	90	2,300	133,842	1,407	.....	12,387,157	5,539,813
1862.....	363	2,276	284,377	3,403	.....	42,674,569	5,112,165
1863.....	449	2,926	333,841	4,613	.....	63,211,105	5,155,055
1864.....	617	4,088	463,107	6,170	.....	85,733,293	4,966,401
1865.....	681	4,662	470,368	7,296	.....	116,781,676	5,096,783
1866.....	320	2,608	336,874	2,847	.....	49,324,526	4,310,778
1867.....	273	2,225	313,086	2,770	.....	31,634,011	4,304,486
1868.....	229	1,704	281,029	2,430	.....	30,120,265	4,251,758
1869.....	203	1,701	255,217	1,921	.....	18,985,165	4,144,639
1870.....	186	1,443	183,217	1,853	.....	15,870,531	4,946,507
1871.....	177	1,446	181,738	2,020†	.....	19,431,027	4,111,412

* Change of the fiscal year.

† From this number should be deducted 130 mates not permanent officers of the Navy.

TABLE II. *Line Officers*—1816 to 1871.

Year.	Admirals.	Vice-Admirals.	Rear Admirals.	Commodores.	Captains.	Master Command'rs or Commanders.	Lieut. Command'rs.	Lieutenants.	Masters.	Passed Midshipmen or Ensigns.	Midshipmen.	Cadet Midshipmen.	Mates.	Total Line Officers.
1815.....								150			495		...	695
1816.....					32	18		157			415		4	716
1817.....					31	32		87			404		7	736
1818.....					34	26		182			362		4	716
1819.....					35	23		213			350		4	758
1820.....					34	23		302			364		2	674
1821.....					32	21		193			336		1	653
1822.....					31	31		196			340		1	681
1823.....					30	30		183		75	240		...	664
1824.....					28	30		172		51	313		...	680
1825.....					24	30		228		48	356		...	689
1826.....					32	29		209		43	361		...	696
1827.....					31	27		228		36	374		...	716
1828.....					33	29		229		33	392		...	806
1829.....					35	33		263		30	425		...	842
1830.....					37	39		259		32	41	425	...	788
1831.....					37	34		255		31	54	377	...	787
1832.....					40	37		250		32	74	345	...	818
1833.....					37	41		259		31	94	356	...	807
1834.....					37	41		259		29	133	317	...	812
1835.....					37	41		257		27	178	272	...	812
1836.....					38	40		257		27	199	251	...	807
1837.....					40	41		258		27	200	241	...	830
1838.....					50	49		276		27	181	247	...	844
1839.....					52	55		283		27	106	240	...	851
1840.....					53	55		290		29	191	231	...	883
1841.....					55	55		288		28	195	262	...	1029
1842.....					68	96		328		30	103	400	...	1032
1843.....					67	94		324		31	133	410	...	1066
1844.....					67	96		324		30	147	356	...	1032
1845.....					68	96		327		31	159	314	...	1074
1846.....					64	97		326		28	181	364	...	970
1847.....					67	97		324		31	206	240	...	966
1848.....					67	97		327		31	218	228	...	1022
1849.....					68	97		327		31	270	161	...	940
1850.....					68	97		327		32	278	152	...	932
1851.....					68	97		327		33	233	171	...	929
1852.....					68	97		325		32	205	144	...	862
1853.....					68	97		327		32	197	122	...	892
1854.....					68	97		326		18	198	89	...	812
1855.....					68	97		326		32	190	66	...	821
1856.....					68	97		326		10	46	194	...	696
1857.....					64	96		311		24	24	30	...	745
1858.....					76	106		319		1	23	45	...	789
1859.....					81	116		338		20	47	187	...	840
1860.....					80*	114		325		34	49	238	...	872
1861.....					79*	114		321		36	55	267	...	664
1862.....		4	18	40	51	144		90		...	67	230	...	783
1863.....		4	14	37	72	144		92		30	9	282	...	931
1864.....		6	18	36	72	144		96		28	2	457	...	946
1865.....		1	5	19	35	67	130	113		53	31	458	...	959
1866.....		1	4	19	35	71	142	90	11	39	84	450	...	990
1867.....	1	1	10	24	46	90	165	22	53	54	72	421	...	1103†
1868.....	1	1	9	24	40	90	136	45	29	52	157	344	...	1252‡
1869.....	1	1	10	25	50	89	171	76	80	154	77	288	...	
1870.....	1	1	10	25	50	90	180	64	99	160	74	251	...	
1871.....	1	1	12	25	50	89	181	141	151	69	69	240	...	

* One senior flag officer.

† Including 58 mates, temporary officers not eligible for promotion and not properly belonging to the Regular Navy, and should be classed as Volunteers.

‡ Including 130 mates, temporary officers not eligible for promotion and not properly belonging to the Regular Navy, and should be classed as Volunteers.

TABLE III. *Warrant or Forward Officers, and Marine Corps, 1816 to 1871.*

Warranted or Forward Officers, 1815 to 1871 inclusive.					Officers of the United States Marine Corps, 1815 to 1871 inclusive.							
Year.	Boatswain.	Gunner.	Carpenter.	Sailmaker.	Total.	Cadet.	Lieut. Colonel.	Major.	Captain.	Lieutenant.	Second Lieutenant. ^a	Total.
1815	98	94	18	12	82	1	1	2	20	21	18	62
1816	86	94	6	2	60	1	1	1	20	21	18	61
1817	86	94	6	2	58	1	1	1	16	19	13	50
1818	86	94	17	11	72	1	1	1	9	23	16	49
1819	86	94	16	11	71	1	1	1	9	23	16	48
1820	10	22	17	12	70	1	1	1	9	24	9	43
1821	14	18	12	8	52	1	1	1	8	24	16	49
1822	16	17	13	10	56	1	1	1	8	21	15	45
1823	16	18	13	11	58	1	1	1	9	24	16	50
1824	15	18	14	12	59	1	1	1	9	24	15	49
1825	16	16	10	10	52	1	1	1	9	24	14	48
1826	13	12	10	9	44	1	1	1	9	23	17	50
1827	15	14	11	9	49	1	1	1	9	24	16	50
1828	14	18	14	11	57	1	1	1	9	24	16	50
1829	17	19	13	14	63	1	1	1	9	24	16	50
1830	18	20	16	16	70	1	1	1	9	24	16	50
1831	18	19	13	17	67	1	1	1	9	24	16	50
1832	21	16	12	18	67	1	1	1	9	24	16	50
1833	16	19	15	13	63	1	1	1	10	24	16	50
1834	18	17	16	14	65	1	1	1	10	24	16	50
1835	18	20	20	19	77	1	1	1	13	20	19	58
1836	21	20	20	19	80	1	1	1	13	20	19	58
1837	22	23	20	19	84	1	1	1	13	20	20	59
1838	25	29	23	24	101	1	1	1	13	19	20	58
1839	32	35	27	26	120	1	1	1	13	20	19	58
1840	32	37	24	25	118	1	1	1	13	20	20	59
1841	29	36	28	27	120	1	1	1	13	20	20	59
1842	32	41	36	33	142	1	1	1	13	20	19	58
1843	37	43	38	35	153	1	1	1	13	20	20	59
1844	32	39	35	33	139	1	1	1	13	20	20	59
1845	30	42	36	34	142	1	1	1	13	20	20	59
1846	31	42	36	34	143	1	1	1	13	20	20	59
1847	32	42	36	31	141	1	1	1	13	20	20	59
1848	38	44	40	29	151	1	1	1	14	23	24	70
1849	39	44	42	33	158	1	1	1	18	24	24	75
1850	39	43	42	34	158	1	1	1	18	23	23	73
1851	43	46	45	37	171	1	1	1	17	23	21	70
1852	41	45	45	38	169	1	1	1	16	21	21	67
1853	44	46	49	41	180	1	1	1	16	20	20	65
1854	38	48	51	41	178	1	1	1	14	20	20	63
1855	37	45	39	40	174	1	1	1	14	19	20	62
1856	39	40	48	39	166	1	1	1	14	20	20	63
1857	38	40	48	39	165	1	1	1	13	19	20	61
1858	38	44	47	42	171	1	1	1	14	19	20	62
1859	40	44	48	41	173	1	1	1	15	20	19	63
1860	41	46	46	42	175	1	1	1	14	20	20	63
1861	43	47	45	40	175	1	1	1	14	20	20	63
1862	54	93	60	46	253	2	2	2	24	30	30	95
1863	53	84	56	45	238	2	2	2	20	28	29	89
1864	49	71	53	40	213	2	2	2	21	30	22	84
1865	46	65	47	36	194	2	2	2	22	30	24	87
1866	30	63	43	32	177	2	2	2	22	30	24	87
1867	32	59	40	30	181	2	2	2	22	30	30	93
1868	32	55	36	31	174	2	2	2	21	30	27	88*
1869	51	50	32	30	163	1	2	2	22	30	23	86*
1870	46	52	38	31	167	1	2	2	23	30	26	90*
1871	46	57	39	34	176	1	2	2	22	30	30	93*

* One brigadier-general since 1868. The senior officer has always been styled the lieutenant-colonel-commandant, colonel-commandant, or brigadier-general commandant. Since 1868, the number of majors and captains is included those of the staff ranking with the line. At present there are three staff officers holding the rank of major, and two that of captain.

STAFF OFFICERS, 1815 TO 1842 INCLUSIVE.											
STAFF OFFICERS, 1842 TO 1871 INCLUSIVE.											
VOL. OFFICERS, 1872 TO 1871 INCLUSIVE.											
LINE.											
STAFF.											
Year.											
Acting Master's Mate.											
Acting Ensign.											
Acting Master.											
Acting Vol. Lieutenant.											
Acting Lieutenant and Lieut.-Commander.											
Year.											
Total of Staff Officers.											
Professors and Teachers of Languages.											
Chaplain.											
3d Asst. Engineers.											
2d Asst. Engineers.											
1st Asst. Engineers.											
Chief Engineers.											
Asst. Paymasters.											
Paid Asst. Paymaster.											
Paymasters.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
Surgeon's Mate.											
Assistant Surgeon.											
Passed Asst. Surg'n.											
Surgeon.											
Year.											
Total Staff Officers.											
Chaplain, Professors of Mathematics, and Teachers.											
Bureau or Paymaster.											
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TABLE V. *Sailing Vessels of United States Navy—1817 to 1839.*

Year.	Ships of the Line.	Bazens.	Frigates.	Corvettes.	Ships of War.	Brigs of War.	Reconnoirers.	Gambets.	Galleys.	Flagmen.	Store Vessels.	Block Ships.	Unarmed Vessels.	Bomb Vessels.	Steam Frigates.	Steam Gallies.	Explosive Vessels.	Total No. of Vessels.
1817	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	111
1818	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	110
1819	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	108
1820	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	106
1821	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	104
1822	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	102
1823	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	100
1824	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	98
1825	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	96
1826	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	94
1827	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	92
1828	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	90
1829	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	88
1830	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	86
1831	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	84
1832	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	82
1833	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	80
1834	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	78
1835	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	76
1836	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	74
1837	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	72
1838	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	70
1839	5	5	6	3	13	12	11	11	24	34	1	1	6	2	1	1	11	68

TABLE VI. *Sailing and Steam Vessels—1840 to 1861.*

[illegible]

TABLE VII. *Sailing and Steam Vessels—1862 to 1871.*

Year.	SAILING VESSELS.					STEAM VESSELS.										Total No. of Vessels in the U. S. Navy.		
						Screws.			Iron Clads.			Side Wheel.						
	First Rates.	Second Rates.	Third Rates.	Fourth Rates.	Total Sailing.	First Rates.	Second Rates.	Third Rates.	Fourth Rates.	Total.	First Rates.	Second Rates.	Third Rates.	Fourth Rates.	Total.			
1862...	7	10	19	65	101	5	16	29	6	53	2	19	40	51	112	363		
1863...	4	7	12	53	106	6	15	34	96	141	4	6	37	6	53	149	449	
1864...	3	6	16	84	109	12	35	37	129	313	9	6	56	4	74	10	52	617
1865...	3	6	16	84	109	22	32	43	168	365	9	6	56	71	3	8	56	621
1866...	1	6	16	19	42	23	31	17	64	135	3	7	6	53	60	4	47	330
1867...	6	15	15	38	38	30	18	15	33	106	3	6	6	47	62	4	43	273
1868...	6	9	43	5	32	19	21	17	43	100	7	4	41	3	55	4	23	259
1869...	6	9	11	5	31	19	21	16	40	96	7	4	38	3	52	1	11	303
1870...	6	9	11	5	31	5	24	19	40	68	6	5	40	51	1	1	12	177
1871...	2	17	10	29	58	3	24	18	42	87	4	6	40	50	4	7	11	176

The following Table, prepared from the official Navy Register for January of each year, by Capt. G. H. Preble, U. S. Navy, exhibits the number of midshipmen graduates, and midshipmen attached to the Naval Academy, with their classification and the number of resignations, deaths, and dismissals, from 1851 to 1871, inclusive.

TABLE VIII. *Midshipmen in Naval Academy.*

Year.	Midshipmen.	First Class.	Second Class.	Third Class.	Fourth Class.	Total.	Resignations.	Deaths.	Dismissals.
1851...	171	..	..	..	..	171	14	5	13
1852...	144	..	..	..	28	172	7	1	16
1853...	122	..	..	28	48	198	17	1	13
1854...	89	6	16	30	42	183	9	3	17
1855...	66	12	26	16	74	194	23	1	15
1856...	47	20	17	38	49	171	31	4	2
1857...	30	15	24	28	78	175	34	1	2
1858...	45	15	24	35	100	219	38	..	7
1859...	47	20	28	56	83	234	30	..	1
1860...	49	25	39	57	117	287	22	..	3
1861...	55	35	38	70	124	324	33	3	4
1862...	67	21	31	120	79	318	112	1	14
1863...	9	21	31	118	212	391	45	2	14
1864...	2	39	63	137	218	489	20	4	53
1865...	31	60	99	133	163	486	74	..	53
1866...	84	78	110	115	147	534	70	2	12
1867...	72	89	87	98	147	493	68	2	7
1868...	157	81	82	88	93	501	57	2	3
1869...	77	80	77	76	53	363	25	1	5
1870...	74	68	64	37	92	325	45	1	4
1871...	69	51	33	48	108	309	42	1	3

U. S. NAVAL ACADEMY AT ANNAPOLIS.

I. HISTORICAL NOTICE.

THE history of the United States Naval Academy, as an institution, opens October, 1845, but its germ and growth in suggestions, for the practical instruction of midshipmen, dates back to the beginning of the century. A school of the Navy constituted one of the departments, or group of schools, in the plan of a Military Academy drawn up by Alexander Hamilton, as Inspector General of the Army, and submitted to Congress, January, 1800, in the Report of the Secretary of War (James McHenry), whose department was at that time charged with the management of naval affairs.

In 1808, General Williams, in a report on the enlargement of the Military Academy at West Point, of which he was Superintendent, recommended "that nautical astronomy, geography, and navigation should be taught by the professor of mathematics," and that the plan of the institution should "take in the minor offices of the navy; but also any youths from any of the States who might wish for such an education, whether designated for the army or navy, or neither, and to let these be assessed to the value of their education." This plan was doubtless suggested by the Polytechnic School of France, and if adopted at the time, would have not only have given to the army and navy a much broader and firmer basis of scientific attainments, but would have hastened the construction of roads, bridges, canals, and railroads, and the development of the mineral and other industrial resources of the country, by turning out every year a number of young men, qualified in scientific culture, to enter on the duties of civil, mining and mechanical engineers, and become superintendents of manufacturing and other corporate enterprises. In the absence of any special school of preparation for such civil services, officers of the army were induced to resign their commissions to superintend the construction of canals and railroads under state and corporate auspices.

In the measures which grew out of the war of 1812, was the act of January, 1813, "to increase the Navy of the United States," in which authority was given to the Secretary of the Department to

(895)

employ a schoolmaster for each vessel to which 12 midshipmen were assigned. By these, so far as appears in any published document, was given the first formal employment of this class of officers.

In 1814 the Secretary (William Jones) suggested "the establishment of a Naval Academy with suitable professors, for the instruction of the officers of the Navy in those branches of Mathematics and experimental philosophy, and in the service and practice of gunnery, theory of naval architecture, and art of mechanical drawing, which are necessary to the accomplishment of the naval officer." This suggestion was renewed by his successor, Smith Thompson, of New York, and a distinct proposition to locate it on Governor's Island, in the harbor of New York, by Secretary S. L. Southard, in 1824. In a special communication to the Senate in 1825, he says:

The younger officers enter at so early an age, that they can not be accomplished, or even, moderately accurate scholars. They are constantly employed on ship-board, or in our navy-yards, where much achievement in learning can not be expected. And yet the American naval officer is, in fact, the representative of his country in every port to which he goes, and by him is that country in greater or less degree estimated. "The science and information requisite for a navy officer," he repeats in his Report for 1827, "is in no respect inferior to that required by the army officers and engineers, and the interest as well as the honor of the country are not less concerned in the correct performance of their duties."

President Adams (J. Q.) in his Annual Message, Dec. 5, 1825, remarks that "the want of a Naval School of instruction corresponding with the Military Academy at West Point, for the promotion of scientific and accomplished officers, is felt with daily increasing aggravation." In his message, Dec. 4, 1827, he returns to the subject "as still soliciting the sanction of the legislature," adding—

Practical seamanship, and the art of navigation, may be acquired upon the cruises of the squadrons, which, from time to time, are dispatched to distant seas; but a competent knowledge, even of the art of ship-building, the higher mathematics and astronomy; the literature which can place our officers on a level of polished education with the officers of other maritime nations; the knowledge of the laws, municipal and national, which in their intercourse with foreign states and their governments, are continually called into operation; and above all, that acquaintance with the principles of honor and justice, with the higher obligations of morals, and of general laws, human and divine, which constitute the great distinction between the warrior patriot and the licensed robber and pirate; these can be systematically taught and eminently acquired only in a permanent school, stationed upon the shore, and provided with the teachers, the instruments, and the books, adapted to the communication of these principles to the youthful and inquiring mind.

In 1841, Secretary Upshur renewed the recommendation of his predecessors, and a bill to establish a naval school at or near Fortress Monroe, passed the Senate, but was not acted upon in the House.

The nucleus of a school was formed when the midshipmen were first ordered to the Naval Asylums at Philadelphia and other places, to prepare for their examination, and several of the professors of Mathematics repaired there to give instruction.

In 1845 the Secretary of the Navy (George Bancroft), inaugurated and completed in four months an arrangement by which a Naval School, with its corps of professors, was instituted in a suitable location, without any special appropriation, and with only the existing authority of acts of Congress. The original plan is best set forth in Mr. Bancroft's letter to Commodore Franklin Buchanan, whom he appointed superintendent of the institution.

NAVY DEPARTMENT, August 7th, 1845.

SIR:

The Secretary of War, with the assent of the President, is prepared to transfer Fort Severn to the Navy Department, for the purpose of establishing there a school for midshipmen.

In carrying this design into effect, it is my desire to avoid all unnecessary expense—to create no places of easy service—no commands that are not strictly necessary—to incur no charge that may demand new annual appropriations; but, by a more wise application of moneys already appropriated, and officers already authorized, to provide for the better education of the young officers of the navy. It is my design not to create new officers, but, by economy of administration, to give vigor of action to those which at present are available; not to invoke new legislation, but to execute more effectually existing laws. Placed by their profession in connection with the world, visiting in their career of service every climate and every leading people, the officers of the American navy, if they gain but opportunity for scientific instruction, may make themselves as distinguished for culture as they have been for gallant conduct.

To this end it is proposed to collect the midshipmen who from time to time are on shore, and give them occupation during their stay on land in the study of mathematics, nautical astronomy, theory of morals, international law, gunnery, use of steam, the Spanish and the French languages, and other branches essential, in the present day, to the accomplishment of a naval officer.

The effect of such an employment of the midshipmen, can not but be favorable to them and to the service. At present they are left, when waiting orders on shore, masters of their own motions, without steady occupation, young, and exulting in the relief from the restraint of discipline on shipboard.

In collecting them at Annapolis for purposes of instruction, you will begin with the principle that a warrant in the navy, far from being an excuse for licentious freedom, is to be held a pledge for subordination, industry and regularity,—for sobriety, and assiduous attention to duty. Far from consenting that the tone of the discipline and morality, should be less than at the universities or colleges of our country, the President expects such supervision and management as shall make of them an exemplary body, of which the country may be proud.

To this end you have all the powers for discipline conferred by the laws of the United States, and the certainty that the department will recommend no one for promotion, who is proved unworthy of it from idleness or ill-conduct or continuing ignorance, and who can not bear the test of a rigid examination.

For the purpose of instruction, the department can select from among twenty-two professors and three teachers of languages. This force, which is now almost wasted by the manner in which it is applied, may be concentrated in such a manner as to produce the most satisfactory results. Besides, the list of chaplains is so great that they can not all be employed at sea, and the range of selection of teachers may be enlarged by taking from their number some who would prefer giving instruction at the school to serving afloat. The object of the department being to make the simplest and most effective arrangement for a school; you will be the highest officer in the establishment, and will be intrusted with its government. It is my wish, if it be possible, to send no other naval officer to the school, except such as may be able and willing to give instruction. Among the officers junior to yourself, there are many whose acquisitions and tastes may lead them to desire such situation. For this end

the department would cheerfully detach three or four of the lieutenants and passed midshipmen, who, while they would give instruction, would be ready to aid you in affairs of discipline and government. Thus the means for a good naval school are abundant, though they have not yet been collected together and applied.

One great difficulty remains to be considered. At our colleges and at West Point, young men are trained in a series of consecutive years; the laws of the United States do not sanction a preliminary school for the navy; they only provide for the instruction of officers who already are in the navy. The pupils of the naval school being, therefore, officers in the public service, will be liable at all times to be called from their studies and sent on public duty. Midshipmen, too, on their return from the sea, at whatever season of the year, will be sent to the school. Under these circumstances, you will be obliged to arrange your classes in such a manner as will leave opportunity for those who arrive, to be attached to classes suited to the stage of their progress in their studies. It will be difficult to arrange a system of studies which will meet this emergency; but with the fixed resolve which you will bring to the work, and with perseverance, you will succeed.

Having thus expressed to you some general views, I leave you, with such assistance as you may require, to prepare and lay before this department for its approbation a plan for the organization of the naval school at Fort Severn, Annapolis.

The posts to which you and those associated with you will be called are intended to be posts of labor; but they will also be posts of the highest usefulness and consideration. To yourself, to whose diligence and care the organization of the school is intrusted, will belong, in a good degree, the responsibility of a wise arrangement. Do not be discouraged by the many inconveniences and difficulties which you will certainly encounter, and rely implicitly on this department as disposed to second and sustain you, under the law, in every effort to improve the character of the younger branch of the service.

I am, respectfully, your obedient servant,

GEORGE BANCROFT.

Com'r FRANKLIN BUCHANAN,
United States Navy, Washington.

Under these instructions the school was duly organized at Fort Severn, Annapolis, and formally opened, October 10, 1846, with 36 midshipmen, appointed in 1840, and who were, before resorting to Annapolis, preparing for examination at the Naval Asylum at Philadelphia; 13 of the date of 1841, who were to remain at their studies until drafted for sea, and 7 acting midshipmen, appointed in 1845. The first staff of instruction consisted, besides Commander Buchanan, of Lieutenant James H. Ward, in gunnery and steam; Surgeon J. L. Lockwood, in chemistry; Chaplain George Jones, in English studies; Prof. Henry H. Lockwood, in natural philosophy; and Prof. Girault, in French.

In 1846, Congress appropriated an amount not exceeding \$28,000 for repairs, improvements, and instruction at Fort Severn, Annapolis, Md.; and a like amount in 1847 for the same objects, "including a purchase of land not exceeding 12 acres, for the use of the Naval School." In the same year (Dec. 1847), Secretary Mason recommended a practice ship.

Down to 1849, the regulations provided for two years' study at

the School, followed by three years' service at sea, and then two years' study at the School. This alternation of study and practice—of practice at sea associated with opportunities of study, and of study at school with many advantages of testing principles by experiments and the observations of professors and officers of experience, possessed advantages which still commend it to the minds of many officers over that of longer continuous study at school before practice in earnest is begun. The old system had its shortcomings, but it turned out good seamen and gallant officers, and its best features ought to be again engrafted on the new.

In 1849, a board of officers was directed by the Secretary of the Navy to consider the organization of the school at Annapolis, and report to the department. This was done, and new regulations were matured, and ordered to go into effect on the first of July, 1850. The teachers' staff was enlarged, and a practice ship, the *Preble*, a sloop-of-war of the third class, was attached for the purpose of a summer cruise, and the institution was henceforth styled in Acts of Congress and Reports of the Secretary, the Naval Academy. The course of instruction was arranged for four years, with an interval of two or three months in the summer devoted to a practice cruise for two of the classes. The President was authorized to appoint a Board of Visitors, whose functions were "to witness the examinations of the several classes, and examine into the police, discipline, and general management of the Academy."

The new system began in October, 1850, under Commander C. K. Stribling, as Superintendent, who was relieved in 1853 by Commander L. M. Goldsborough, who was in turn relieved by Captain George S. Blake, in 1857, who continued in the superintendence till 1867, when Admiral Porter was assigned to the position, which he held till 1870, when Commodore J. L. Worden succeeded him.

The first or lowest class in the four years' course, entered in October, 1851, and graduated in June, 1854, having had two summer cruises of practice, and a long period of continuous study.

The necessities of the War, which as early as April, 1861, had made Annapolis the seat of military operations, caused the removal of the Academy—its professors, students, library and apparatus—in the month of May, to Newport, first to Fort Adams, and afterwards to the Atlantic House in the town, and to the *Constitution* and other ships, which were not fit for active service, in the inner harbor. All the members of the three highest classes were ordered into active service, and with the fourth class, and 200 newly appointed, the system of instruction went on as in times of peace.

Course of Studies in 1864.

In the organization of the Naval School at Annapolis, in 1845, the ordering of the course of studies was left practically with Prof. William Chauvenet, a graduate of Yale College, who had been commissioned professor of mathematics in 1841, and had acted as such in the instruction of midshipmen in the Naval Asylum at Philadelphia. The following is substantially the arrangement proposed by him for the classes when fully organized—the main deviation in the course as followed in 1864 was in the assignment of text-books.

FIRST CLASS—FOURTH YEAR.

Department of Practical Seamanship, Naval Gunnery and Naval Tactics.—Seamanship, Naval Tactics. Naval Gunnery; Simpson's Ordnance and Gunnery. Simpson's Translation of Page's Theory of Pointing. Dahlgren's Boat Howitzer.

Department of Astronomy, Navigation and Surveying.—Theory of Navigation. Practical Astronomy. Marine Surveying.

Department of Natural and Experimental Philosophy.—Lardner on Heat. Wells' Chemistry. Main & Brown on the Steam-Engine.

Department of Ethics and English Studies.—Constitution U. S.; Kent on International Law, Vol. I.

Department of Spanish.—Ollendorff.

SECOND CLASS—THIRD YEAR.

Department of Practical Seamanship, Naval Gunnery and Naval Tactics.—Seamanship. Simpson's Naval Gunnery.

Department of Mathematics.—Smyth's Analytical Geometry. Smith's Differential and Integral Calculus.

Department of Astronomy, Navigation and Surveying.—Davies' Surveying. Herschel's Astronomy. Bowditch's Navigation.

Department of Natural and Experimental Philosophy.—Lardner's Optics, Acoustics, Electricity, and Magnetism. Smith's Mechanics.

Department of Field Artillery and Infantry Tactics.—Hardee's Light Infantry Drill. Instruction in Field Artillery.

Department of Ethics and English Studies.—Wayland's Moral Science.

Department of French.—Girault's French Student's Manual. Dumas' Vie de Napoleon. Manesca's Reader.

THIRD CLASS—SECOND YEAR.

Department of Practical Seamanship, Naval Gunnery and Naval Tactics.—Seamanship.

Department of Mathematics.—Davies' Legendre's Geometry. Chauvenet's Trigonometry. Davies' Mensuration.

Department of Ethics and English Studies.—Eliot's History U. S. Quackenbos' Rhetoric. Composition.

Department of French.—Girault's French Student's Manual. Girault's Vie de Washington.

Department of Drawing and Draughting.—Line Drawing.

FOURTH CLASS—FIRST YEAR.

Department of Mathematics.—Greenleaf's Arithmetic. Davies' Algebra. Davies' Legendre's Geometry.

Department of Ethics and English Studies.—Bullions' English Grammar. Cornell's Geography. Worcester's and Lord's History. Composition.

Department of Drawing and Draughting.—Sketching.

CONDITION IN 1864.

The following Report, drawn up by the author of this Treatise, after a residence of several weeks in the institution, as one of the Board of Visitors, exhibits its condition in 1864, and contains suggestions on the educational improvement of the military and commercial marine, which met the approbation of the Board.

Report of the Board of Visitors to the Secretary of the Navy.

SIR:—The Visitors, appointed “to witness the examination of the several classes and to examine into the state of the police, discipline, and general management of the Naval Academy,” for 1864, report as follows:—

I. THEIR OWN PROCEEDINGS.

The regular session of the Board, although several members were in attendance earlier, commenced on Monday, the 20th of May, and continued from day to day until Friday, June 10th. Their investigations as a Board, embraced—

First.—A thorough inspection of the buildings, ships, and material equipment provided by the Department for the residence, subsistence, health, and instruction of the several classes.

Second.—An attendance of the whole or a portion of the Visitors, for a brief period at least, on the examination conducted by the Academic Board, of one or more sections of each class in each study professedly attended to during the year.

Third.—An exhibition of the professional knowledge and skill attained, including the parade, evolutions, tactics, and drill as a military corps—the uses of the rapier, cutlass, musket, and cannon, great and small—the handling of ropes, sails, spars, boats, and everything included in practical seamanship in harbor, afloat, and in action.

Fourth.—Inquiries into the mode of conducting the entrance examination, and the results—the classification and programme of studies for each class—scholarship and conduct rolls—causes of failure to graduate, and system of punishment—chapel exercises, morality, manners, and personal habits of the midshipmen—the accounts and vouchers for the expenditure of government appropriations, including payments made for the use of the cadets—in fine, into the police, discipline, and general management of the institution.

A committee of the Board was authorized and requested to attend the entrance examination of the new class, as well as the final

examination of the graduating class, in order that the report required of the Visitors might cover the operations of the Academy for the year 1864.

Every facility for prosecuting their investigations was extended to the Visitors by the Superintendent, Officers, Professors, and Students.

II. CONDITION OF THE NAVAL ACADEMY IN 1864.

In presenting some details of the condition of the Naval Academy as they found it, and in offering suggestions for its improvement, which the submitting of a report implies, the Visitors are not unmindful that the institution is not at present furnished with permanent buildings and equipments in all respects adapted to its purpose;—that even such as are furnished were selected with reference to a smaller than the present number of pupils;—that its staff of instructors and course of instruction have been disturbed by the pressing exigencies of a great war, calling off into actual service some of its most experienced teachers;—that the education which it aims to give is not general but special, not covering the whole ground of a generous culture, but particularly adapted to make accomplished seamen and midshipmen;—and, moreover, that in an educational field so wide and subjects of inquiry so numerous as attach themselves to the details of such a school, a brief visit, made while the institution is not following its usual daily routine, is not in all respects the most favorable to the formation of just and reliable opinions. They at the same time believe that the government and people expect that the liberal appropriations in its favor will be expended with a judicious economy, and that the knowledge imparted will be accurate, thorough, and professional, and that its graduates will be really fitted for that rank of the service for which they are professedly trained. They recognize the fact that the school is yet in the youth of its development, and also that its purpose is not only to perpetuate naval science as it has been taught, but to maintain a progressive course of instruction, engrafting thereon all necessary or possible improvements.

Organization for Administration and Instruction.

The Visitors find the Naval Academy, subordinate to the direct supervision of the Department, under the immediate government of a Superintendent, Commodore George S. Blake, who is held responsible for its discipline and management. He is assisted as chief executive officer by the Commandant of Midshipmen, Commander Donald M. Fairfax, who resides in the Academy building on shore, and is also head of the department of Seamanship, Naval

Gunnery, and Naval and Infantry Tactics. The Commandant is assisted in the different departments of his duty on ship and shore by three senior assistants and eleven assistants, nine of the latter being of the rank of lieutenant, and the remainder lieutenant-commanders. Two of the senior assistants have charge of the Practice-ships Marion and Macedonian, and also assist in instruction; six of the assistants are engaged in executive duty on board the School-ships Constitution and Santee, while the others, as well as these, are charged with certain branches of instruction in the department of which the Commandant is chief.

There are also attached to the Academic Staff one Professor of Astronomy, Navigation, and Surveying; two Professors of Mathematics, with six assistants in the same department; one Professor of Natural and Experimental Philosophy, with two assistants; one Professor of Ethics and English Studies, with nine assistants; one Professor of the French language, with an assistant; one Professor of the Spanish language; one Professor of Drawing and Draughting, with an assistant; one Sword-master, with an assistant; and one Librarian, who acts also as assistant in Mathematics, and Ethics and English studies. The officers not attached to the Academic Staff include a Paymaster, a Surgeon, with two assistants, a Chaplain, (with three, who are engaged as instructors,) a Commissary, Storekeeper, Secretary, Treasurer, and clerks to the Superintendent and Commandant.

The Academic Board is composed of the Superintendent, the officers in charge of the Practice and School-ships, and the professors, except that the professors of French, Spanish, and Drawing take part only upon matters pertaining to their own departments. The Board is required to conduct and regulate all examinations of candidates and students, preparing the necessary papers and reports in connection therewith, to prescribe the order and times of instruction, to recommend text-books for the approval of the Naval Department, and books, instruments, and other necessary material for instruction, to recommend at pleasure the restoration or farther trial of students that have been dismissed or found deficient in scholarship, to grant certificates of graduation, and to report from time to time, on the system of studies and instruction pursued, and propose such improvements as experience may suggest.

Buildings and Material Equipment.

The material arrangements for the accommodation of the Academy, for the lodging, subsistence, and comfort of the pupils in health and sickness, and for study and instruction, both scientific and profes-

sional, although made on a sudden emergency, for temporary occupancy, and for a smaller number, are far from being insufficient in extent, or particularly objectionable, when compared with similar arrangements for other great schools. The main building on shore is of wood, originally intended to lodge and board a large number of guests, and as adapted to the uses of the Academy, accommodates about half of the classes as well as most boarding schools provide for their pupils. The arrangements are not as convenient or as safe from fire as those at Annapolis; but they are too good to be complained of, even if they do require a strict observance of regulations, or special organization and diligence to protect from fire, which would carry mourning into many homes. Good discipline and good recitations, and a large amount of military and naval knowledge are secured under the difficulties such as they are, which the Department, be they great or small, will, doubtless, remove at the earliest possible moment. In any permanent or temporary arrangement, on ship or shore, while the privacy and comfort of separate lodgings for pupils should as far as practicable be secured, the Visitors recommend that convenient halls be provided, properly ventilated, warmed and lighted, and supplied with the best dictionaries, encyclopedias, and naval histories and biographies—to be occupied for study at certain hours by such pupils as have not acquired the power of concentrating attention, and the habit of solitary study—a power and habit of the highest importance, but very rarely attained. The same rooms might be open to the pupils at certain hours every day for the purpose of reading naval histories and biographies, and for consulting the encyclopedias and other books of reference. The formation of right habits of study and the habit and mode of reading such books to the best advantage should be made a matter of special and frequent inculcation by the head of each department of study.

The lack of suitable buildings for lodging, subsistence, and study, for a portion of the pupils, is supplied by an extension of the Schoolship System, first inaugurated on board of the "Plymouth," at Annapolis, in 1849, in our system, although always the main feature in the French system of naval education. The old "Constitution" and the "Santee," properly moored in the harbor of Newport and adapted, are used for the residence and study of the younger classes, which are in this way brought more readily into the daily routine of the school and the service without the vulgar annoyances, to which the youngest classes are almost universally subjected, when lodged in the immediate neighborhood of the next older class. If School-

ships are to constitute a permanent, integral feature of the Academy, the details of arrangements for separate lodging and class study require additional attention. For the present, recitations are attended in suitable buildings on Goat Island, near which the ships are moored and reached by covered passages. On this island is sufficient room for all sorts of athletic sports, military drill, and target practice.

The "Macedonian" and "Marion" are used for practice in the evolution of guns and other naval tactics by the several classes. To these are added, at least for the purposes of the summer cruise, the screw steamer "Marblehead" and the yacht "America."

Number of Pupils—Entrance Examination.

The number of pupils belonging to the Naval Academy in the year closing June, 1864, was 458, distributed into four classes, generally according to the period of their connection with the institution, with a staff of 57 officers and instructors. This is an astonishing development of the Academy in respect to pupils, as well as in the number of the teaching staff, and equipment for professional training, since Oct. 10th, 1845, when the Academy found a location at Fort Severn in Annapolis, or since January 1st, 1846, when it was reported to have 36 midshipmen and six professors and instructors, including the Superintendent. To judge of the progressive development of the institution, and of the results of the annual examination which they were appointed to witness, the Visitors deemed it necessary to ascertain the average condition of each class as to age and attainments, at the time of becoming connected with the Academy, and with the general results of the entrance examination—this examination being the only check on the admission of unqualified candidates—no previous examination being held in the districts or States from which they come.

By law and regulations governing the admission of candidates into the Academy, the maximum number of pupils is limited to 526, viz., two for every Congressional district or territory, appointed on the nomination of the member or delegate, from actual residents of the district, if such nomination is made to fill a vacancy duly notified, prior to the first day of July in any year, and if not so made, by the Secretary of the Navy; and twenty-five more appointed by the President, two for and from the District of Columbia, ten from the country at large, ten from the sons of officers of the army and navy, and three from the enlisted boys of the navy. All candidates who receive notice of their provisional appointment must present themselves to the Superintendent for examination be-

tween the 20th and 31st of July, or September in case of second appointments. The examination is twofold; first, before a medical board, consisting of the surgeon resident and two other medical officers designated by the Department; and second, before the Academic Board. The candidate must be found, according to the law of 1864, to be between the ages of fourteen and eighteen years—of good moral character—physically sound, well formed, and of robust constitution—and pass a satisfactory examination in reading, writing, spelling, arithmetic, geography and English grammar.

The requisition as to age was advanced from 16 in 1861, to its present maximum in 1864, while the Board was in session, and conforms in that respect to the age which they had decided to recommend. The traveling expenses of the successful candidates are paid.

The Visitors were furnished on application with tables exhibiting the statistics of these entrance examinations from 1851 to 1863 inclusive. From these tables it appears that out of 1,522 candidates, nominated and appointed conditionally, but afterwards examined, 313 or one-fifth of the whole were rejected as unqualified, although the attainments required were such as any graduate of a common school should possess. Of the number (1,209) admitted, 466, more than one-third, failed on the first year's course. Out of the number who failed at the earlier examinations, three hundred and thirty-one were turned back for a second trial, and after floundering along in the lower sections, only a very small per cent. succeeded in graduating. Of the whole number admitted, (1,209,) only 269 graduated, including 93 who were received into the service from 1861 to 1864 before completing their studies.

From another table, covering the entrance examinations from 1860 to 1864 inclusive, it appears that out of 1,003 candidates who presented themselves for admission, 807 were admitted, while 53 were rejected by the Medical Board, 219 by the Academic Board, 11 withdrew, and 3 were found to be over the maximum age.

From another table, exhibiting the ages of the successful and unsuccessful candidates, it appears that out of 1,141 candidates examined, 201 (18 per cent.) were rejected, and of the number rejected, 177 were under 17 years of age. Of the 940 admitted, 313 (33 per cent.) failed the first year, and of the number that failed, 254 were under 17 years of age. The average age of the candidates admitted was 16 years and 2 months, and of those who failed, 15 years and 10 months.

The fact that one-fifth of the whole number nominated failed to

pass the examination in the most rudimentary branches of a common English education—and in only the most elementary portions of these branches—indicates unmistakably how little regard has been paid to school attendance and proficiency in the selection of candidates. To judge how far these failures might be attributed to a laudable strictness on the part of the Academic Board, the entrance examination papers, which are filed away from year to year, were called for, and from those it appears that the questions asked and exercises required were few and simple—far too few and simple—far below the requirements of any Public High School; and yet such wretched perversions of the orthography of the most common words, such mistakes in American geography, such bungling use of the English language in the composition of a simple letter, such numerous failures in arithmetical operations not going beyond the elementary rules and simple exercises in fractions and proportion, it would be difficult to gather from all the Public High School entrance examinations of the country. More strictness on the part of the Academic Board would have saved the government hundreds of thousands of dollars, for of the candidates allowed to pass, two-fifths fail on the studies of the first year, although these studies belong to a good English education, and are preliminary to a special scientific naval training—showing a want of suitable preparatory knowledge, of aptitude for study, or of will and desire to learn. A portion of those who fail the first year are put back for a second year's trial, and in some instances for a third, and the proportion of those thus put back who finally succeed in graduating is very small, thereby causing a total loss of the thousands of dollars expended upon each. From data gathered from the annual reports of the Department, it appears the annual expense of a pupil of the Naval school exceeds \$1,500, and that each graduate who has been four years in the institution costs the government over \$10,000. But the pecuniary loss is not the only consideration—the places filled by pupils, no matter what their courage or general ability, unable or unwilling to profit by the opportunities of scientific and professional instruction so lavishly provided, might be filled by competent, ambitious, diligent, and courageous young men, if they could have had their qualifications tested by a competitive examination.

Daily Routine.

The morning gun calls the cadets up at 6 o'clock. Inspection of the rooms follows, when the bedding must be found arranged, the rooms swept, and every thing in order. Ten minutes are given to chapel services, and half an hour to breakfast, which is over at 7.15.

Forty minutes recreation are then allowed, during which sick-roll is called and such as report themselves indisposed are marched to the hospital and reported to the surgeon. At 7.55 the sections are formed under the supervision of the Officer of the Day, assisted by the section leaders, and at 8 o'clock, on given signal, they are marched in close order to their recitation rooms, in perfect silence and with strict military decorum. All who are not engaged in the recitation rooms are expected to be preparing their lessons in their own rooms, and it is the duty of the superintendents of floors to see that they are there. The dismissal and re-formation of sections at the end of each hour are conducted with similar formality and regulated by special signals. Study and recitation continue until 1 o'clock, when the cadets are formed in order by the captains of crews, (the whole corps being organized in nine guns' crews, for the purposes of discipline and practical instruction,) all 'special orders and rules for the day are read, and they are then marched into the mess hall for dinner, which occupies forty minutes. From 1.40 to 1.55 recreation is allowed and the sections are then again formed as in the morning for recitation and study. At 4 o'clock ten minutes are given to preparation for drill, as may be the order of the day, and then follow instruction in fencing, infantry or artillery drill, and recreation until parade and roll-call at sunset. Supper immediately succeeds, to which half an hour is given, and recreation until study-call at 6.30 or 7.00, according to the season. Study hours continue until tattoo, at 9.30, during which time the cadets must all be in their rooms, and after inspection of rooms all lights are extinguished at 10 o'clock.

The routine on board ship is as far as possible the same. No control is exercised over the occupation of the time by the cadets during study hours, provided good order is preserved. No studies or exercises are required on Saturday afternoon and one-half of each class may then be allowed liberty beyond the limits of the Academy. A vacation is given at the close of the second year, the only one in the whole course. As means of recreation, chess, draughts, and all games of chance are strictly forbidden. On the other hand, every facility is afforded for games of ball, boxing, fencing, boating, &c.

Course of Instruction, Examinations, and Merit-Rolls.

The course of instruction at the Naval Academy is comprised in eight departments, with their special branches, as follows:—

First Department, in six branches—Practical Seamanship, Theory and Practice of Gunnery, Naval Tactics, Infantry Tactics, Howitzer Drill, and the Art of Defense.

Second Department, Mathematics, in seven branches—Arithmetic and Algebra, Geometry, plane and solid, Trigonometry, Mensuration, Descriptive Geometry, Analytical Geometry, and the Differential and Integral Calculus.

Third Department, in four branches—Astronomy, Practical Astronomy, Navigation, and Surveying.

Fourth Department, in eight branches—Mechanics of Solids, Mechanics of Liquids, Pneumatics, Acoustics, Electricity, Heat, Chemistry, and the Steam-Engine.

Fifth Department, in seven branches—English Grammar, Descriptive Geography, Physical Geography, Outlines of History, Rhetoric, Ethics, and Political Science.

Sixth Department—the French Language.

Seventh Department—the Spanish Language.

Eighth Department—Drawing and Draughting.

These studies are distributed into four annual courses for the four regular classes, each class being subdivided into convenient sections, usually according to the relative standing of the members. During the last year the first class, of 36 cadets, has been graded into three sections; the second class, of 59 cadets, into five sections; the third class into six sections; and the fourth class, during the first term, with 176 cadets, into fourteen sections, and in the second term, with 156 cadets, into twelve sections—each section receiving separate instruction.

The more difficult portions of the several branches may be reserved for the higher sections of the classes, and it is frequently the fact that in certain branches no instruction whatever is given to the lowest sections. Deviation from the general rule for the admission of cadets only in the month of September has made the formation of "Intermediate Classes" necessary, so that there are now two divisions of the second class and two divisions of the third class. By this means the number of sections is increased, the labors of instruction augmented, and much inconvenience in other respects created. The demands of the times have also introduced other irregularities into the course, hurrying the more forward sections through their studies and detailing them into active service at the close of the third year, with or without a graduating examination, while the lower sections are retained through the whole four years.

The Commandant of Midshipmen and the several professors are each at the head of a special department, with such assistants as may be necessary. The professors, instructors, and assistants are responsible for the regular and orderly conduct of their respective

classes and sections while under instruction, and must report all want of preparation, absence, or misconduct. Daily notes are taken of the progress and relative merit of each pupil in each of his studies. The assistants must make weekly reports of such notes to the heads of their departments, who in turn report to the Superintendent, recommending such transfers as should be made from one section to another. The scale of daily merit in each study embraces seven grades, with corresponding values designated by numbers, as follows:—Thorough, (4.0)—Very Good, (3.5)—Good, (3.0)—Tolerable, (2.5)—Indifferent, (2.0)—Bad, (1.0)—Complete Failure, (0.) The average standing for the week in each study accompanies the report. Monthly reports are drawn up by the Academic Board for each month in the academic year, showing the relative standing of the members of each class in their different studies, and also their conduct or demerits. These reports are based upon the weekly reports and upon the results of the examinations, when such are held within the month, and are posted for public inspection. The examination weeks are considered of equal weight with those of the month.

The examinations are held by the Academic Board in the months of February and June, and are sufficiently thorough to enable the Board to decide upon the proficiency and relative merits of the members of the several classes. After each June examination a "general merit-roll" is formed for each class, for which purpose a maximum number or value is assigned to each of the principal branches in the several departments. The total amount of these maxima throughout the course is 1,000, and they are distributed among the departments and branches, for the different classes, as follows:—In the first year, to mathematics, 20—grammar and rhetoric, 10—geography, 10—history and composition, 10—drawing, 10—conduct, 5—total, 65;—In the second year, to seamanship, 20—mathematics, 35—grammar and rhetoric, 15—history and composition, 10—French, 30—drawing, 25—conduct, 15—total, 150;—In the third year, to seamanship, 40—gunnery, 20—infantry tactics, 25—howitzer drill, 20—mathematics, 45—general astronomy, 25—practical astronomy, navigation, and surveying, 15—mechanics, 30—physics, 25—moral science and international law, 20—French, 40—conduct, 30—total, 335;—In the fourth year, to seamanship, 100—gunnery, 60—naval tactics, 30—practical astronomy, navigation, and surveying, 75—physics, 30—steam-engine, 35—moral science and international law, 20—Spanish, 50—conduct, 50—total, 450. The minima values are fixed at one-third of the corresponding maxima.

The "general merit-roll" includes only such as pass a satisfactory examination in all the principal branches of their class and have not exceeding 200 demerits recorded against them. In the formation of the roll, the individual having the highest standing in any branch for the year receives the corresponding maximum number, while the one who has the lowest standing receives the corresponding minimum. The intermediate members of the class receive numbers proceeding by equal differences from the maximum to the minimum, in the order of their relative merit as fixed by their "class merit-rolls." The gradation for conduct is determined by allowing the maximum number to such as have no demerits, and for others diminishing that maximum by $\frac{1}{10}$ part for every demerit recorded against them. All the numbers thus assigned to the several members for the different branches of study and for conduct are then added together, and the members are arranged in each class according to the aggregates thus obtained. For the graduating class a "graduating merit-roll" is formed by adding the aggregate numbers of each member upon the several "general merit-rolls" for the four years and arranging the order of the members according to these new aggregates. The highest number reached upon the "graduating merit-roll," by any one of the class just graduating, was 859.

If any student at any examination fails to pass a satisfactory examination in any principal branch, or has recorded against him more than 200 demerits since the commencement of the academic year, a report is made of the case to the Secretary of the Navy, showing the habits of study, aptitude for study and for sea duties, and his general habits and conduct, and upon his decision the student is dismissed, or upon recommendation of the Academic Board, allowed to continue at the Academy for further trial.

The final graduating examination is held by a special Board and occurs, by a recent regulation, not less than one year after the close of the course. This examination embraces seamanship and naval tactics, practical gunnery, navigation, and management of steam-engines, and the standing in these branches is combined to determine the relative merits of the candidates. In assigning numbers, 1,000 is considered the maximum and 333 the minimum for such as are considered qualified for promotion, and the Board assigns such numbers within these limits as will fairly express the relative qualifications of the members of the class. The numbers thus assigned, when added to the numbers already assigned on the "graduating merit-roll," determine the standing of the graduates as ensigns; the highest number taking precedence.

Text-Books. Studies of the past Year.

The method of teaching as at present pursued is almost wholly by means of text-books and recitations. A series of lectures is delivered in connection with the recitations in Natural Philosophy and Chemistry. Without underrating the office of the text-book, the success of the French Polytechnic method of teaching even the higher Mathematics by lectures, collateral study, and examination, and the experience of all schools, of the power of the human voice and of the human eye to win, hold, and harmonize attention, should not be lost to this institution, many of whose pupils need the influence of such a method to vitalize their powers of thinking and to bring within their grasp the general principle or doctrine of the subjects taught.

The division of the classes into small sections of 12-14 midshipmen each, of nearly equal standing, tends to secure the personal and thorough instruction of each and all. The attempt was made, by furnishing prepared blanks to the several departments, to ascertain the character and actual amount of the studies and exercises accomplished by the several sections during the eight months of study of the year 1863-4. The returns made are not complete, but it appears that the English studies of the lowest class (in 12-14 sections) have consisted of one lesson a week in Spelling and Derivation, four in Bullion's English Grammar, four during the first term in Cornell's Geography, and during the second term in General History, with daily exercises in Composition and the exercise of the Voice; in Mathematics, five lessons a week during the first term in Greenleaf's Common School Arithmetic, and during the second term in Davies' University Algebra. In the upper sections, the Algebra was commenced within the first term and more or less nearly finished at the close of the year. The highest section had also five lessons a week for three weeks in Davies' Elementary Geometry (5 books) and instruction twice a week in Drawing. The space in the several text-books actually gone over varied considerably in the different sections. It will be seen, therefore, that the studies of this class, with the exception of Algebra and Geometry, are simply those of every common school, and yet the lower section is reported as having succeeded but "imperfectly" in Grammar, and "very imperfectly" in Algebra. It is also to be stated that a part of the class had received eight weeks additional preparatory instruction during August and September, 1863.

In the third class, of six sections, there were three lessons per

week, during the first term, in American History, and during the second term in Rhetoric. The lower section prepared six English compositions each term—the highest section, weekly compositions through the second term. All the sections prepared three lessons weekly in French during the first term and four lessons during the second, but with very unequal progress. In Mathematics, (five lessons per week,) Algebra was completed by the lower sections and reviewed by the higher in the first four or five weeks, when Elementary Geometry was taken up by all, and completed in the first term by the highest section. In the second term, Elementary Geometry for three weeks by the lowest section, and Trigonometry for the rest of the term—in the highest section, Trigonometry for ten weeks, Mensuration two weeks, and Analytical Geometry commenced, for three weeks. The first section had also three lessons a week in Marine and Topographical Drawing, and during the first term one lesson a week in Seamanship.

In the second class, of five sections, during the first term, five lessons a week in Analytical Geometry, replaced in the highest section by the Differential and Integral Calculus for five weeks; four lessons a week in Statics, to which the first section added Dynamics, three weeks; five lessons a week in Surveying, three weeks in each term, with practical exercises. The lowest sections had also four lessons a week in French, and the first section weekly lessons in Seamanship and Infantry Tactics, and two lessons a week in Gunnery. In the second term, five lessons a week in Dynamics, Hydrostatics, Pneumatics and Acoustics, with twelve lectures, Surveying, three weeks, and Astronomy, ten weeks. Two lessons a week in Wayland's Moral Science. The first section had also two lessons a week in Gunnery.

The first class, consisting of the three more advanced sections of the second class, and in its third year of study, during the first term were pursuing chiefly second class studies, having five lessons a week in Physics, including Statics, Dynamics, Hydrostatics, Acoustics, Magnetism, and Electricity, with sixteen lectures; four lessons a week in Theory and Practice of Navigation (six weeks) and General Astronomy (eleven weeks; two lessons a week in Seamanship, and two in Gunnery, Naval Light Artillery, and Field Fortifications. In the second term, four lessons a week in Heat and Chemistry, with nine lectures; three in Wayland's Ethics and Kent's Constitution of U. S., and International Law; three in the Theory and Practice of Navigation; two in Seamanship; and one in Gunnery, &c. Two lessons a week were given through the year in Spanish, by means of the French.

In addition to the daily lessons of each class are the general practical exercises by divisions, by the higher classes on shore embracing daily exercises in Fencing, three exercises weekly in Infantry Drill, Howitzer Drill once a week, the Great Gun Drill upon the Practice Ships twice weekly in favorable weather, and a certain amount of Target Practice by the first class. The younger classes on the school-ships have also their special drills. Special instruction is given them in boating, and the numerous cutters and launches belonging to the ships afford ample opportunity for recreation and practice of this kind at suitable times. The use of the "Rainbow," a schooner-rigged craft of 15-20 tons, is also not unfrequently allowed to pleasure parties made up from the cadets. Weekly bathing is enjoined and practiced throughout the year as a sanitary regulation, but the absence of the cadets from port during the summer months, while on the cruise, prevents the attainment of that knowledge and skill in the art of swimming, which seem to the Visitors so essential a requisite.

The general results of the examinations and exercises as observed by the Visitors, may be stated as in general very favorable. The examinations of the classes were made by sections and conducted by the individual professors of the departments, with great fairness and impartiality, without any purpose of embarrassing the pupils, and for the single object of eliciting the extent, accuracy, and vividness of the pupil's knowledge of the topic. Written lists of questions were furnished to the cadets on entering the examination rooms, which were usually answered in writing upon the blackboard, with opportunity for oral explanation. The difference in the proficiency shown by the higher and lower sections, in all except the first class, was very strongly marked. In the written answers, the writing was fair and legible, and the spelling and composition very creditable—revealing in these respects an immense improvement upon the entrance examination papers of the same cadets. The Visitors would suggest that in future examinations there should be more of paper, even if there should be less of blackboard work, and that a portion of the questions should be handed in on slips by the Visitors and answered in writing with ink, in presence of the Board, by every member of the section present.

The practical professional exercises of the cadets upon the parade ground and on board ship, embracing all the different branches of shore and ship duty, (including a harbor cruise on board the Practice Steamer,) and designed to exemplify the proficiency of the classes in seamanship, gunnery, and naval and infantry tactics, were

performed in the most satisfactory manner, justifying the professional pride manifestly felt by those taking part in them. Moreover, these exercises, instead of being executed under the direction, as heretofore, of the respective Academic officers in command, were conducted under the charge wholly of officers appointed from the midshipmen themselves.

Physical Training.

The unavoidable exposures and risks of the naval service require not only a sound mind—a mind well informed, quick, and accurate in its operations, but a sound body—a body supple, athletic, and tough to resist the rapid alternations and continuous exposures of wet and cold weather. Although careful and continuous training can do much to develop and strengthen the qualities referred to, the records of the Academy and of the service, as well as the present appearance of many of the cadets, show that sufficient regard has not been paid to vigor and elasticity of physical constitution, in the original appointment, or the entrance medical examination. The regular military drill and evolutions, the small arm and other exercises, in which the whole corps participates, the professional practice in gunnery and seamanship, all help to supply these deficiencies. There is still room for more careful scrutiny for inherited tendencies and hidden defects, in the entrance medical examination, as well as in the regular course of naval education, for a well arranged system of gymnastic exercises and athletic games, to give suppleness to the joints, steadiness to the nerves, hardness to the bones, and elasticity to the sinews. Such games and sports as the young universally accept with eagerness and pursue with unflagging interest, should be systematically introduced. Ample time, room, and encouragement by rank, prizes, and publicity, should be given to make a fondness and indulgence in such games as cricket, football, leaping, boating, &c., the habit of every member of the lower classes at least. An hour a day devoted to these healthful sports, even if taken from the study and class-room,—even more, if taken from the idle lounging, or the listless walk, or vulgar scuffling, will give at once health and strength, increased capacity for study, and valuable social qualities and many virtues—all results of emphatically the highest professional value.

As part of the physical training of naval cadets, the expansion of the chest and the culture of the vocal organs should receive more special attention than the word of command on parade, and the questions and answers in the examination would indicate they had received. A clear, full, decisive voice is an element of influence on

the deck at all times, and of power in the hour of danger, as well as on the field or in the senate chamber.

The first beginning of habits, secret or open, which waste the vigor of the mind and body, should be watched with professional skill as well as parental interest, and those cadets in whom such indulgencies have grown into habits, should be cut off from the institution and service without hesitation and without reprieve.

Domestic and Sanitary Arrangements.

The institution is peculiarly fortunate in having had for years a Commissary who understands his business and gives universal satisfaction to all concerned. The neatness of the kitchen, the supply, preparation, and serving of the food, the geniality, good order, and enjoyment of the mess-hours, and the fact that no complaint reached the Visitors from any one of the 450 boys, blessed with good health and plenty of physical exercise, makes the record of this department an exception to similar departments in other large collegiate institutions. This comes from having the right man in the right place.

The hospital arrangements on shipboard and on shore, although not as large and quiet as would be desirable or as would be provided specially in permanent quarters, are sufficient for the demands on their accommodations. The location of the institution and the judicious arrangement and management of the Academy as to cleanliness, exercise, and diet, as well as the presence of a surgeon and two assistants on the Academic staff, and numerous attendants for hospital service, would seem to act as a preventive of accidents and disease, the mean daily percentage of sick on ship and shore from Oct. 1st to May 31st being returned at a little more than three per cent. out of an average attendance of 447 midshipmen. In calling for the annual reports to the Department of the medical condition of the institution, the Visitors were informed that a duplicate copy or abstract was not retained. Such copy or abstract would be highly convenient, and would seem to be even necessary, if it is deemed advisable to have a periodical inspection of the sanitary condition and requirements of the school.

Religious Observances and Instruction.

The regulations require that the students shall be assembled in the chapel for prayers daily, fifteen minutes before the breakfast hour, and that divine service shall be held on Sunday, which officers and students are expected to attend, unless excused on the ground of conscientious scruples, declared in writing by the former, and by the parents or guardians of the latter. These daily and Sunday ex-

ercises are conducted by the regular Chaplain of the institution. He is at the present time assisted in these and other such voluntary religious labors by three other chaplains of the Navy, who are now in residence as assistant professors. There are four Bible classes composed of cadets, and over one-eighth of the members are communicants in the different denominations of Newport. The student who brings, in his moral culture from home, religious convictions and habits, can easily preserve and strengthen them here, and no amount of instruction in the institution can compensate for the neglect of parental example and teaching in this respect. The absence of the religious element in the character and training of youth is a fundamental defect, and no institution of learning, special or general, can safely, for any length of time, dispense with appropriate and adequate means of religious instruction and a practical recognition of religious obligations, consistent with due regard to the religious convictions of individuals and the equal rights of all religious denominations. Such individual convictions and denominational rights can be best respected, not by ignoring the subjects themselves, but by selecting the chaplain from time to time so as to represent different religious denominations, and in all cases, in reference to his ability to be useful as chaplain in this institution.

The reading of the Sabbath, and one of the exercises of Monday morning might be so arranged as to harmonize with the religious observances and uses of Sunday, and the whole be made to unfold and enforce the great, definite, and unchanging obligations of every human being to his fellow-men, to his country, and to God.

As part of the religious and moral instruction of the Academy, more at least should be attempted to prevent, and if these unfortunately exist, to eradicate certain vulgar and vicious habits, whose beginnings are small, but which ultimately take complete possession of the individual. Although the Visitors can not, from their own knowledge, speak of its existence, they have had too many assurances from those who did know, to have any doubt of the prevalence of the vulgar and immoral practice of profanity, and that several of those addicted to it are among the youngest members of their classes, who came here entirely pure in this respect. The medical and police experience of the institution detects the occasional existence of other tastes and habits more directly affecting the health and morality of their victims, and which should and doubtless do receive the considerate and vigilant attention of the authorities, especially of the Chaplain, Surgeon and Superintendent:

Discipline.

The Superintendent is charged with and held responsible for the good order and discipline of the Academy, and it is made the duty of every officer, professor, and instructor, having knowledge of any violation of law or regulation, or of any crime, irregularity, neglect, or other improper conduct, of which any student or any other one has been guilty, to report the same without delay to the Superintendent. Offenses are defined with great minuteness and precision, and the circle of punishments embraces demerits on the roll of conduct, private and public reprimand, confinement to Academy grounds, to room, or to guard-room, and withdrawal on necessity, or dismissal. In the administration of discipline, the Superintendent is clothed with much power, which is exercised by the present incumbent with great discretion and the happiest results. The private memorandum and letter book of this officer, respecting every case of discipline during the year, was placed before the Visitors, and they can bear willing testimony to the preventive admonition and parental regard with which he has exercised his authority.

Demerits, to be considered in making up the conduct-rolls, are assigned for all offenses. Such delinquencies as are not deemed deserving of severer punishment are grouped into four classes, which count ten, eight, six, four, and two demerits respectively, besides a miscellaneous class counting from one to ten demerits according to circumstances. The *total* demerits of each cadet is expressed by the sum of all demerits standing against him on record for the year, increased for the third class by one-sixth, for the second class by one third, and for the first class by one-half.

No punishment of any kind can be inflicted by other authority than that of the Superintendent. Report is read at evening parade of all demerits and other punishments that have been inflicted during the day, and opportunity is always given for excuse or explanation. Full record is made of every case of discipline, and a monthly conduct-roll is publicly posted showing the number of demerits against each cadet. It is evident that this conduct-roll does not fairly represent the character and conduct of the cadets, as a large number of demerits may be gained by numerous minor offenses, which involve neither immorality nor lawlessness, while a cadet who has been guilty of most flagrant acts of vice and disobedience may still be charged with but few demerits. Yet the conduct-roll has but a subordinate influence in determining the general merit-rolls, and in the question of dismissal the fuller record of punishments, as

well as the demerit-roll, has its weight in determining the action of the authorities.

Financial Affairs.

All money appropriated for the support of the Naval Academy is drawn for by the Paymaster and by him deposited with the Sub-Treasurer in Boston. The Paymaster draws upon him, from time to time, to make his disbursements.

The principal heads of expenditure for the fiscal year ending June 30th, 1864, are as follows:—

Pay of Commissioned and Warrant Officers, Midshipmen, Seamen, and others,	\$241,771.71
Pay of Professors and Assistants,	35,000.00
Expenses of the Academy, School and Practice Ships, Surgeon's necessities, contingent expenses, and repairs of all kinds,	72,753.84

The total of all expenditures from 1st July, 1863, to May 31st, 1864, is reported at \$383,419.41.

From the pay of the midshipmen, which is \$500 per annum, \$100 are reserved yearly to be paid upon graduation, though this sum is sometimes diminished by unavoidable circumstances. There is also deducted from their pay, the amount of board—at present \$16.50 per month—and \$3.00 per month for washing. The aggregate of these sums is paid monthly by the Paymaster to the Commissary. Articles of clothing for the midshipmen are provided under contract by the Storekeeper with the approval of the Commandant. All other articles for their use are purchased by the Storekeeper, from funds provided by the Paymaster, at prices sanctioned by the Commandant.

The midshipmen receive such articles as they desire upon requisition approved by the Commandant, and no other articles are permitted to be sold to them than those which the Storekeeper is authorized to have. Each midshipman has a pass-book in which his purchases are entered, and regular report is made by the Storekeeper to the Paymaster, who charges against each the aggregate amount of his purchases. On the 30th April, 1864, the amount of balances still due to the midshipmen was \$44,579.93, the aggregate of indebtedness by them being only \$111.90. The amounts to the credit of the members of the graduating class vary from \$180 to \$400.

The accounts of the Commissary are examined quarterly by a committee of three officers appointed by the Superintendent, to whom they make report. The Visitors deemed it their duty to go

behind the reports of this committee, and deputed one of their number to examine personally the original accounts of the Commissary and Storekeeper. As the result of this examination, which was conducted with the most rigid scrutiny, it is but justice to state that they found the accounts correct in all their details, and the prices of all articles as low as they can be purchased at wholesale in the city of New York, and the Visitors consider the financial affairs of the Academy as conducted with commendable skill and fidelity.

While the Visitors bear willing testimony to the fidelity with which the financial affairs of the Academy, as well as the departments of subsistence, discipline, and instruction, are and have been administered, they can not but express their disappointment at the very small number of officers of the lowest rank which the institution has contributed to the naval service. With an aggregate annual expenditure of several hundred thousand dollars, the aggregate number of graduates, since the opening of the four years' course, in 1851, including the three classes of 1858, '59 and '60, which were ordered into active service in 1862 and '63, before completing their studies, is but 269, or at the rate of less than 22 each year, at an expense to the country of over \$12,000 for each graduate. If the 93 who entered the service with only two or three years' residence had completed their course, the aggregate expense for each graduate would have exceeded \$15,000. This, as it appears to the Visitors, small result, is due mainly to the want of care in selecting candidates, and the very low standard of general scholarship required for entering the Academy. The experience of this institution is the same as that of others of the same character; any mode of selection which does not test in advance the natural aptitude and preparation for the special studies of the course, and exclude rigorously all who are found deficient, will burden the institution with a number of students which will have to be thrown off after months and sometimes years of struggling to incorporate them into the regular classes and to the manifest injury, in the meantime, of the scholarship and character of the institution. While a nomination by patronage, and a pass examination have a direct tendency to reduce the average ability of the selected candidates to the minimum required, a competitive examination raises the general average to the maximum ability of all who apply.

Graduating Class of 1864.

The present graduating class (consisting after the final examination of 31) at the close of its third year has completed the whole course

prescribed, excepting that the Calculus has been omitted and that Surveying has been limited to instruction in Harbor and Coast Surveying, from Bowditch. Steam and the Steam-engine have received fuller attention from this than any preceding class, embracing six weeks of theory and practice on board of the steamer Marblehead—altogether too little attention for a department so important. Two summer cruises have been made by this class—both coast cruises—the first on board the John Adams, from June 6th to Sept. 30th, 1862; the second from 16th June to 25th Sept., 1864, in which the following vessels were united, viz.: Flagship Macedonian, sloop of war Marion, screw steamer Marblehead, and the yacht America. Upon these cruises the midshipmen were practiced in all the regular duties attaching to the posts of lieutenant and master, taking by turns upon themselves the working of the ship, in the different vessels; making and calculating observations for determining the ship's position, going through all possible manœuvres and performing the duties incident to the management of ships in action, in heavy weather, or in the many emergencies which arise requiring superior skill in seamanship. They were engaged in instructing the crews in gunnery, in infantry and sword-drill, and in drill of the battery. They were also detailed for actual boat service, and for the transferring of howitzers and marines from ship to shore. During the last cruise Meyer's code of signals was used by the graduating class as signal officers, in communicating from vessel to vessel in the fleet, and instruction was also given in the Naval Code of signals, and in Navigation throughout the cruise to all cadets on board. In addition to these cruises the yacht America, in charge of cadets of this class, as commanding officers, has been engaged in the performance of despatch-boat duty, and also special "coast picket duty" in search for the Tallahassee.

The experience of this class—made up of three advanced sections of what is now the second class (the graduating class of 1865,) would seem to indicate, that under a system of appointment that should admit from the start only those who had maturity of mind and requisite scholarship, the professional studies of the Academy might be completed in three years. This is one year longer than the course of the French Naval School at Brest, the entrance examination of which would exclude most of the graduates of our Academy.

III. RECOMMENDATIONS.

The Visitors close their report with the following suggestions, as the results of their examinations and conferences, in reference to the

further development of the Naval Academy and the extension of nautical education generally, for the consideration of the Department.

I. Until the pupils of the Naval Academy have gone through the theoretical and practical course of instruction provided in this institution expressly to qualify them to act as Midshipmen, the Visitors recommend that they be designated as *Naval Cadets*—simply *candidates* for the lowest official rank in the Navy—and that no cadet be rated as midshipman, no matter how well up he may be in his studies, until he has had at least eighteen months of professional practice afloat, towards which time the actual time at sea of each experimental cruise shall be credited.

II. As the most direct blow to the hindrances which practically exclude a large portion of the youth of the country, no matter how strong may be their predilection or great their acquired fitness for the naval service, from even a chance of being admitted to this national school;—as the most effectual preventive of the disappointments now experienced by individuals and families in the failure of many appointees to pass the entrance examination, or to meet ever the low requirements of the first year's course;—as the only effectual way of ridding the institution of the low average ability and attainments which characterize the lower sections of every class, and of bringing up the talent and scholarship and conduct of the whole corps to the average of the first two sections;—as a sure guaranty against the early resignation of officers educated at the public expense for a life service in the Navy, and of a progressive and honorable career as long as life and health last;—as a powerful attraction to draw to this department of the public service a fair share of the best talent and loftiest ambition of the youth of the country, and as a stimulus to their best efforts for self and school improvement for this purpose—the Visitors recommend the immediate abandonment of the custom of selecting candidates for admission by individual patronage, in consideration of neighborhood, relationship, or party connection, or the better motives of the poverty or the public service of parents, and that all appointments be hereafter made in consideration of the personal merit of the applicant, ascertained by a public competitive examination, conducted before an impartial tribunal, constituted as shall be prescribed by law. Admission, sought and obtained in this way, will be honorable to the successful candidates, a source of pride to the neighborhood and State from which they come, a reward to the teachers who have prepared them, and a stimulus to the industry and good conduct of their comrades.

home. The classes of the Academy, replenished every year by new recruits, all of whom have sought the service from personal choice and won their place by personal merit founded on natural aptitude and vigor of mind and acquired knowledge, and who regard the diligent improvement of these opportunities of professional study and practice as the true road to honorable promotion hereafter, to be gained by farther industry and devotion—will at once have an average ability and scholarship equal to that now attained by only five or six out of every one hundred, and a large proportion of the cases of discipline, the “dead weights,” the reëxaminations, and the failures from inability, distaste, or want of preparatory knowledge, will forever disappear from the records of the Academy.

These suggestions have not the merit of originality nor the objections of novelty. The principle recommended has stood the test of seventy years’ trial in France in naval and similar public schools, and is now in successful operation in England, as well as in most of the military schools of Europe. It has been again and again urged by thoughtful friends of this institution and of our other national school at West Point, as the most effectual remedy for the evils complained of. The Academic Board of this Academy, in answer to a request from a committee in 1858 for its opinion on this point, replied:—“The Academic Board has long been of the opinion that the present system of appointing midshipmen without care in their selection, was undermining the very existence of the institution. The records of the Academy show that scarcely more than one-fourth of those admitted graduate. The fault lies with the appointing power, which has not kept the institution supplied with the proper material, and the Board has been powerless in applying a remedy. It has done all in its power by recommending a higher standard of proficiency.” The Visitors for 1862, in the Report of their examinations, remark:—“After a careful examination of the subject, the Board has been forced to the conclusion that the selection of candidates has not been made with sufficient reference to the wants of the public service, but has been and continues to be regarded as a portion of the patronage of the members of Congress making the nominations. The evil does not stop here; for in many cases, after they have been appointed without regard to talents or fitness, and have obtained admission to the institution, and subsequently have been found incapable to pursue the studies of the class to which they belong, the influence of the same member of Congress originally nominating them is successfully used to continue them at the institution, in obtaining authority for them to recommence their studies by joining a lower class; thus retaining

those wanting in talents and fitness, to the exclusion of others of suitable qualifications that might be presented. An institution like this, in which the students are educated and supported by the government, ought to have them selected from the highest and most promising youths of the country.”*

The same general principle, selection by merit, ascertained by the same general method, competitive examination, conducted on such conditions as Congress shall authorize or prescribe, has been recommended for appointments to the kindred national institution—the Military Academy at West Point—with the view of removing the same hindrances and remedying the same defects in the practical working of that school. That eminent military teacher and administrator, General Thayer, under whom the Academy, notwithstanding many hindrances and defects, attained its highest development, recommended the adoption of this principle at the outset of his administration, after having seen its successful operation in the military schools of France; and he has recently, after the lapse of nearly fifty years, all of them spent in actual experience or observation of the practical results of a different principle, renewed the recommendation in a communication to the Secretary of War. He has, within the present year, declared his belief that the adoption at the start, and the continuous recognition of this principle, the selection of candidates for admission on the ground of personal merit and aptitude for the special purposes of the institution, in appointments to the Military Academy, would have more than doubled its usefulness, would have avoided most of the difficulties of administration which it has encountered, would have prevented the popular prejudices which demagogues and disappointed parents and Congressmen have fostered, and would have gained for it a larger measure of the popular favor.

The Visitors of the Military Academy for 1863, in their Report

* An early friend of this institution, on learning the fact stated in the same Report of 1863, from which the above extract is taken, “that in the course of six years one hundred and twenty-four students were turned back to pursue a second time portions of the academic course,” and of this number only six passed the final examination, (thereby costing the country over \$300,000 in pay, salaries, and equipment, for absolutely nothing, and at the same time depriving the naval service of an equal number of competent young officers,) writes to a member of this Board as follows:—“I have had the curiosity to question fifty middies, as I happened to meet with them, without selection, and representing different classes in the institution and different States, as to the circumstances of their appointment—and of these fifty, forty were the near relations or sons of political friends of the parties making the nominations, and five were the sons of persons in official stations at Washington, although appointed ‘at large,’ leaving but five for selection from other sources. In several cases the answers were significant—‘My father had to bleed freely for my appointment.’ ‘My brother worked hard for his election.’ ‘I had the promise of a cadetship at West Point, but as there was no vacancy that year, I got an appointment here.’ ‘I am an exchange. Senator ——— got an appointment for Mr. C.’s nephew, and Mr. C. nominated Senator ——— friend’s son for the place.’”—[*Ed. of Amer. Journal of Education.*]

to the Secretary of War, go into an extended discussion of the advantages and objections to this principle and mode of making appointments. To this document reference is made as embodying the convictions of this Board as to the probable working of the same principle in admissions to the Naval Academy.

III. In connection with a change in the mode of appointment, the Visitors would commend to the consideration of the Department a revision of the conditions as to the age, bodily vigor, and general knowledge of candidates. The old system of training naval officers, by placing boys at the early age of twelve or fourteen years on ship-board in the daily and constant practice of the routine of the ship, when accompanied with the parental oversight of the captain as to conduct, and with regular and progressive instruction in the science and art of his profession, on ship and shore, by the teacher of mathematics and navigation—has produced many capable commanders, out of the larger number who have been ruined for the want of proper supervision and instruction, or grown up into men of mere routine. Some of the brightest names in the records of our own and of the English naval service had no other education or training than this. But these are the exceptions, and their success was as much due to opportunity and original genius, as to their early and continuous ship experience. That system of training officers is, however, everywhere abandoned, and the present aim of every naval power in the world is to seek out young men having a fondness for sea-life, with a generous ambition for naval distinction, with an aptitude for the sciences which qualify and adorn the naval officer, with vigor of body to bear the inevitable exposures of the service, and with a large amount of general knowledge, and then subject them to a special course of professional study and practice in a naval school. For every stage of promotion, additional knowledge as well as professional experience, tested by successive rigid examinations, are required. The experience of this class of schools indicates that those original qualities and acquired qualifications deemed indispensable in candidates for the proper mastery of a thorough course of naval instruction, can not often be found in young men under eighteen years of age.

IV. With an advance in the average age, maturity of mind, and preparatory attainments of the cadets on admission, the Visitors believe a revision and readjustment of the subjects and course of instruction can be advantageously made, which in connection with the new schools of naval construction, and of marine engineering, would greatly extend the range, depth, and practical value of the education of the naval officer, without prolonging the time now

devoted to its acquisition. If the Academy can be relieved of the large amount of merely elementary general education which every graduate of the common schools of the country ought to have received, and which in a few years every aspirant to the privileges of this school would contrive to get, if the law made its acquisition necessary as a preliminary to a competitive examination—then the whole general scientific course could be mastered in two years, with a large amount of military and naval tactics, as well as of practical seamanship in the two summer cruises. At this point the Visitors recommend to the consideration of the Department the establishment of the following departments, or schools, in each of which the course of instruction shall be far more comprehensive and thorough than is now practicable where the branches constitute parts of a single course:—

First.—Of Navigation and Seamanship.

Second.—Of Naval Ordnance and Practical Gunnery.

Third.—Of Hydrography, Marine Surveying, Astronomical Observations, Construction of Charts, &c.

Fourth.—Of Drawing, Naval Designs, Construction of Ships, Naval Machinery, Docks, &c.

Fifth.—Of Steam and Marine Engineering.

Sixth.—Of Naval History and Strategy, International Law—especially of belligerents and neutrals—and the Law of the Sea, Consular Duties, &c.

Seventh.—Of Modern Languages.

Into each of these schools let the cadets be drafted, the choice to be determined by their own predilection or comparative fitness, at the close of the second year, and after completing such number of these courses, not less than four, as may be prescribed, let them have the privilege of an examination.

Each of these departments or schools might be opened to a certain number of candidates, on competitive examination, from each State—no matter where they may have received their education—and permission might be given to officers of any rank to review and extend their knowledge of either of these departments with the more advanced text-books and means of instruction. By this arrangement the service will secure the highest development of any special aptitude, preparation, or experience—and will more frequently get “the right man in the right place.”

The importance of these great departments of the naval service, and of special preparation for them, is fully appreciated by the Academic Board, but any attempt to give this preparation to all the members of the present classes, with such unequal and deficient preparatory

knowledge and with such diverse aptitudes for particular branches, would be futile. The attempt to teach as much as is now done, under the circumstances, only produces confused and unsatisfactory results with a large portion of the class. The remedy for this state of things seems to the Visitors to be in:—

1. More thorough preparation, higher average ability, and greater maturity of mind on the part of the cadets.
2. A thorough scientific course up to a certain point, for all the cadets, to occupy two years.
3. The requiring of linguistic training (in one or more modern languages,) only of those who show some aptitude or previous preparation for the same.
4. An option of two or three of the above courses, and a thorough proficiency in those selected before being permitted to pass as midshipman.
5. And finally continuation of study as well as of practice after graduation in the directions for which there is a demonstrated fitness and ability.

V. The Visitors deem it desirable to concentrate in and around the Naval Academy the largest amount and the highest quality of teaching ability, naval experience, and the apparatus and opportunities of practice of every kind connected with the naval service. But they would also commend to the consideration of the Department the encouragement of Naval Institutes, or temporary courses of instruction, at suitable seasons of the year, in some of the great departments of naval education specified in the foregoing classification—for the benefit of officers on furlough, or connected with the National Dockyards and Depositories, especially those in the neighborhood of large collegiate institutions, on the request of a certain number of such officers. Private naval architects and shipmasters might also be invited to attend these Institutes. Something of this kind should be provided, especially if continued study and examination is required by law and regulation at every stage of promotion in the naval service.

VI. The absence of elementary naval schools and of any regular instruction in navigation, the want of nationality and the low condition of the seaman-class generally, prevents any considerable demonstration or recognition of that nautical taste and aptitude for sea-life in the great mass of the population, which ought to be the basis of all special nautical training. To remedy this state of things, to develop and cultivate, where it exists, a desire for a maritime career, to provide at once a supply of intelligent, hardy, and well-trained seamen, mates, and masters, for the national as

well as for the commercial marine, in time of peace as well as in the emergencies of a sudden or a great war, the Visitors recommend the inauguration, under the auspices of the Naval Department, of a system of navigation schools and naval instruction, in addition to and in connection with our present system of naval apprenticeship, commensurate with the demands of the service, the country, and the age. As the basis of this system, they recommend the immediate offer of pecuniary aid to encourage the establishment of a class of navigation schools in all the large seaports of the country, subject to thorough national inspection in order to secure uniformity and efficiency. They do not deem it necessary to consider here the organization, management, and instruction of this class of schools, farther than to present the outline of a system.

1. The schools which they contemplate, are not to be government schools—although they will be aided and inspected by the Naval Department. Their original establishment, buildings, material, equipment, and immediate management will belong to the local Board of Trade or Commerce representing the shipping and commercial interests of the communities in which they are located. Through such Board, the State or municipal authorities, or individuals, can extend pecuniary aid for the original outfit or annual support.

2. The objects aimed at in the internal constitution of the schools and classes, will be thorough instruction in navigation, seamanship, and kindred branches through:—*First*—Evening classes for adults, (seamen, mates, or masters,) who can not attend regularly on account of absence from port or engagements by day, in which the instruction will necessarily be elementary and fragmentary; *Second*—A junior department or division, in which instruction in arithmetic, drawing, commercial geography, and statistics, will be given, as well as in navigation, the use of instruments, calculation of observations, keeping a log-book, journal, &c; *Third*—A senior department, in which a thorough course of mathematics, navigation, nautical astronomy, steam and steam navigation, &c., will be given, with facilities for acquiring one or more of the languages of the nations with which we have large commercial dealings.

3. The extension of any government aid should be based on the condition that suitable buildings and material equipment are furnished and kept in repair and working order by the local Board, or committee of the same, charged with the immediate management of the school; and such aid shall be subject to reduction and withdrawal for the succeeding year on the recommendation of the Department inspectors. For the first year the only condition should be the actual payment, from other sources, of an equal amount for

the annual expense of the school, subject to the disposal of the local Board. For the second and subsequent years, the sum paid by the government shall be appropriated in portions; *First*—a specific sum to the principal teacher and assistants according to the grade of certificated qualification each may hold; *Second*—a specific sum to the managers of each school for the annual expense of the same, according the average daily or evening attendance of the whole number enrolled in each class or division for a specified period of time in each year; *Third*—a specific sum to the managers of each school according to the number of pupils who shall complete certain specified courses of study to the satisfaction of the inspectors upon examination by them; *Fourth*—a specified sum in prizes, in the form of chronometers, sextants, text-books in navigation, &c., to be competed for by all the pupils of each division of a school; *Fifth*—a specified sum in aid of such professional experience as can be secured for the younger members of the school, as is now given to naval apprentices. All payments by the government should be so made as to secure and reward the services of able and faithful teachers, the regular, punctual, and prolonged attendance of pupils to the completion of each course which they enter, and the liberal coöperation of the local municipal authorities and the commercial and shipping portions of the community in which the school is located. Without such coöperation the whole plan will fail. The school need not be free—but let the instruction be good, practical, and cheap, and its possessor be sure of a lucrative employment, and then there will be a demand for it.

And why should not the national government enter upon this or a better devised system of training its own seamen, and advancing its naval and commercial interests? All maritime nations, either directly and exclusively by the central government, or through local boards of trade and commerce, have aimed to protect the lives and property of citizens engaged in commerce and navigation, by providing not only for the erection of light houses, buoys, and other material safeguards, but also by an adequate supply of competent pilots and mariners, duly trained and commissioned. Our own government has recognized its duty in all these respects, and in the recent enormous expansion and peculiar risks of the steam-marine, has established a system of inspection which is intended to reach every engine used for the propulsion of every vessel of any class in all waters subject to national law. Surely the same policy which permits and justifies this interference of the national arm and the application of the national resources to build light-houses, erect buoys, register the names, tonnage, and ownership of vessels;

which commissions pilots, inspects steam-boilers, surveys harbors, makes observations of the stars, the currents of the ocean and the prevalent directions of the winds in different seasons and latitudes; constructs and circulates maps and charts, and does all these things for the protection of commerce and for the use of the navy, will, in behalf of the same great interests, when satisfied that they are jeopardized by present neglect, see and be assured that the masters, mates, and seamen, who have all the precious lives and enormous properties embarked in commerce in their keeping, are properly trained in the science and art of navigation.

The liberal educational policy of the national government which has set apart over one hundred millions of acres of the national domain for educational purposes, which if the right of inspection into its application had been asserted and exercised, would have amounted ere this time to a permanent fund of over five hundred millions of dollars—and which has more recently appropriated over six hundred thousand acres of public land for the establishment of agricultural and scientific schools;—the similar policy of the State governments, that holds all property subject to taxation for the support of schools, and that authorizes the most munificent appropriations for free public schools in all of the large cities, which are also the great seaports of the country—all justify the belief that a system of education for this large class of the community, once fairly entered upon by the national government, will be cheerfully and liberally responded to and sustained.

In England the same necessity which exists in this country—the reluctance of young people in good circumstances, to enter the maritime service—the low state of the professional as well as general education of her seaman-class—the enormous amount of property and the large number of lives directly interested in commerce and navigation—the reliance for properly manning the national vessels in the sudden emergency of war, on the commercial marine—the representative character which mariners bear, of the religion, manners, and civilization generally of the country, to all nations which they visit—the desire for the elevation of this large class of the population in intelligence, morality, and physical well-being, for its own sake as well as for the happiness, safety, and glory of the whole country—has prompted the government to organize a system of nautical education, not only for officers, gunners, architects, shipwrights, engineers, seamen, and boys employed directly in the national service, but for the masters, mates, sailors, and boys in her large commercial marine. Prior to 1853, the whole reliance of that country for the professional education of masters and mates was their reg-

istration after an examination in the mere mechanical knowledge of navigation and seamanship. To obtain this knowledge, reliance was placed on the economic law of supply and demand, and in this case as in others of an intellectual and moral nature, the least demand was made by those, in the greatest want. Only here and there, in the great seaport towns, individuals poorly qualified in most instances, opened schools and classes of navigation, in which instruction of the most elementary and mechanical character was given without system, to a very small number, and without supervision or responsibility. In 1853, after the great International Exhibition had demonstrated the superiority of France and other continental nations, in the scientific as well as artistic training of their industrial classes, the English Government constituted a Department of Art and Science to administer a large appropriation (amounting annually to nearly a half-million of dollars) so as to extend encouragement to local institutions of practical science scattered in all the principal centers of population, and acting in every department of industry, all subject to the visits of government inspectors. To this Department of Science and Art was assigned the extension of pecuniary encouragement to, and the inspection of a class of schools which had been instituted by the Mercantile Marine Department of the (governmental) Board of Trade, in connection with local boards of commerce and trade, for the benefit of the navigation interests of the country. These schools in 1863 had increased to eighteen—each in an important seaport—each under the management of a local committee—each having a fair attendance of boys, seamen, mates, and masters, who all paid small fees. The system is still in its infancy, but continues to enjoy the confidence of the government and of the large commercial houses.

Nor is this system of governmental aid and inspection of marine and navigation schools, confined to England. In all the continental states in which the commerce is large enough to require the aid of government in any form for its protection, as well as for the indirect advantage of the navy, this class of schools exists—and in some the national policy in this respect is most comprehensive and thorough. In France, the government in its gigantic efforts within the last twenty-five years to establish a navy which in the number, design, construction, and armament of its vessels, in the scientific and professional knowledge of the officers, and the practical intelligence of her seaman, should be equal to that of any other nation—has included the whole commercial marine in its operations. Encouragement is given to private shipyards, architects, and foundries; and the system of maritime "inscription" or enrollment is

so thorough that there is not a master nor an engineer in the commercial service who has not served at least two years in the national dockyards, founderies, or ships, and enjoyed opportunities of professional study, as well as practice, of the most scientific character.

VII. To give unity, stability, thoroughness, and general efficiency to the inspection and operations of the large system of naval education contemplated in the foregoing suggestions, the Visitors recommend the appointment of a Council or Board of Naval Education, in the constitution of which the great features of such a system should be represented, viz. :—(1.) Experience and success in naval command. (2.) Experience in large commercial and maritime affairs. (3.) Success in naval construction. (4.) Success in the instruction and discipline of educational institutions. (5.) A new infusion every year of the popular element, by the appointment from year to year of one or more public-spirited citizens from different sections of the country to attend the local examinations of applicants for admission, and the annual examinations of the several institutions.

To this Board should be assigned the duty of (1.) Frequent personal inspection and examination at other than stated periods. (2.) The thorough examination by themselves, and in connection with the professors, of the several classes in their daily recitations. (3.) The examination by themselves, or by competent experts, of all candidates for admission, of which as far as practicable, the written answers of the candidates should be preserved, and a written report in detail should be filed away for reference.

The language used in the law under which the present Board of Visitors are appointed—"for the purpose of *witnessing* the examination of the several classes"—if taken literally, would certainly justify the practice adopted by this, and as far as they can learn, by previous Boards. At all events, the constitution of this and previous Boards, composed as it is of members a majority of whom have had no experience in school examinations—who have had no acquaintance with this institution before their present appointment—and who are together for but a short period of time, is very inadequate for any purpose of thorough personal examination. They must be satisfied in the main to receive statements on trust, and to receive and communicate only general impressions. All the duties devolving upon the Board of Visitors as at present organized, could be far more efficiently and successfully performed in connection with the other duties of the Council of Naval Education, here suggested.

VIII. With a programme of studies so extensive as that now laid

down or as herein proposed, in which each study is, or should be arranged with reference to what has gone before, as well as to what is to follow, the professor of each department and the teacher of each branch and section, should be kept closely to his portion, each cadet should master thoroughly every step in the succession, no professor should encroach upon the time of another, no teacher should be allowed to pass his pupils indifferently prepared into the succeeding section or branch. Even if no change be made in the present programme this course is essential to the success of the school, and to secure this an Inspector of Studies should be appointed, who should report frequently to the Academic Board all and every infraction of the programme, so that it may be ascertained whether the cause of failure be in the programme, or the class, or the teacher; and the remedy at once applied. Both the special and general duties of the Commandant preclude the constant and minute inspection referred to, and to the professor of no one department can these duties be properly assigned. While there is a superior executive officer who has in charge the external administration of the affairs of the Academy, there is no corresponding officer, as in the opinion of the Visitors there should be, to preside over the vital matters of instruction and training.

IX. The appointment of professors and assistants is a subject from its importance at all times, and from its immediate bearing upon the welfare of the school, deserving of mature consideration. The efficiency and thoroughness of instruction, the spirit of diligent study and the enthusiastic love of it among the midshipmen, depend to a great degree, upon the fitness of the instructor for his post and the method and manner of teaching which he employs. Though there may be some reason for limiting their appointment to the graduates of the Academy, yet the present course of instruction has by no means in view the training of future teachers, nor has it yet reached its full development. The success and advancement of the institution would seem to require the employment of the best educational talent, and none other, to be obtained wherever it can be found. Whenever any vacancy is to be filled, or new appointments to be made, the Visitors recommend that due notice of the same be given, and that the credentials of all applicants be referred to a competent board, and the applicants themselves whose credentials are satisfactory, be subjected to an open, competitive examination.

X. In conclusion, the Visitors recommend that greater publicity be given to all the documents which set forth the object

and operations of the Naval Academy, the mode and conditions of nominating midshipmen, the name of the person responsible for a nomination, the requisitions and results of each entrance as well as of all annual examinations, with specimens of the questions asked and answers given, so far as the same were written or printed. They would respectfully urge that the Official Register of the Academy, with the above and other information deemed necessary by the Department, be sent not only to every member of Congress, but to the libraries of all principal High Schools, public and private, and all institutions where candidates are prepared, that both teachers and pupils may know what the Department requires as preliminary to the special professional training provided in this Academy for any branch of the naval service of the country, and especially how deplorably deficient a large proportion of the candidates are found to be, on only a moderately strict but impartial examination. To this Register might be appended the official report of the Bureau charged with its supervision, or of any Board of Visitors, or Special Examiners, appointed by the Department.

With the best permanent accommodations and equipment of the Academy that can be made at Annapolis or elsewhere—with schools or courses of scientific and practical instruction for every branch of the service, and for every stage of promotion—with a teaching staff so numerous and so diversified as to secure the advantage of special attainment and qualifications to each branch of study—with entire control of the pupil's time—with hospital accommodations and medical services for the sick—with chaplains for religious observances and the moral culture of all—with regular alternations of physical exercise and intellectual labor, and the stimulus of an honorable distinction before and after graduation—the Visitors think it not unreasonable to expect from an institution so provided for, the highest results, especially as the government has it in its power to select for admission, without regard to the social or political status of parents, from among the entire youth of the country, those who are best fitted by their physical and mental endowment and preliminary education, as well as by their aptitude for special studies and predilection for the naval service, for which those studies are a preparation.

All which is respectfully submitted.

JOHN MARSTON, *Commodore U. S. Navy, President.*

JAMES A. HAMILTON, *New York.*

G. D. A. PARKS, *Illinois.*

JOHN RODGERS, *Commodore U. S. Navy.*

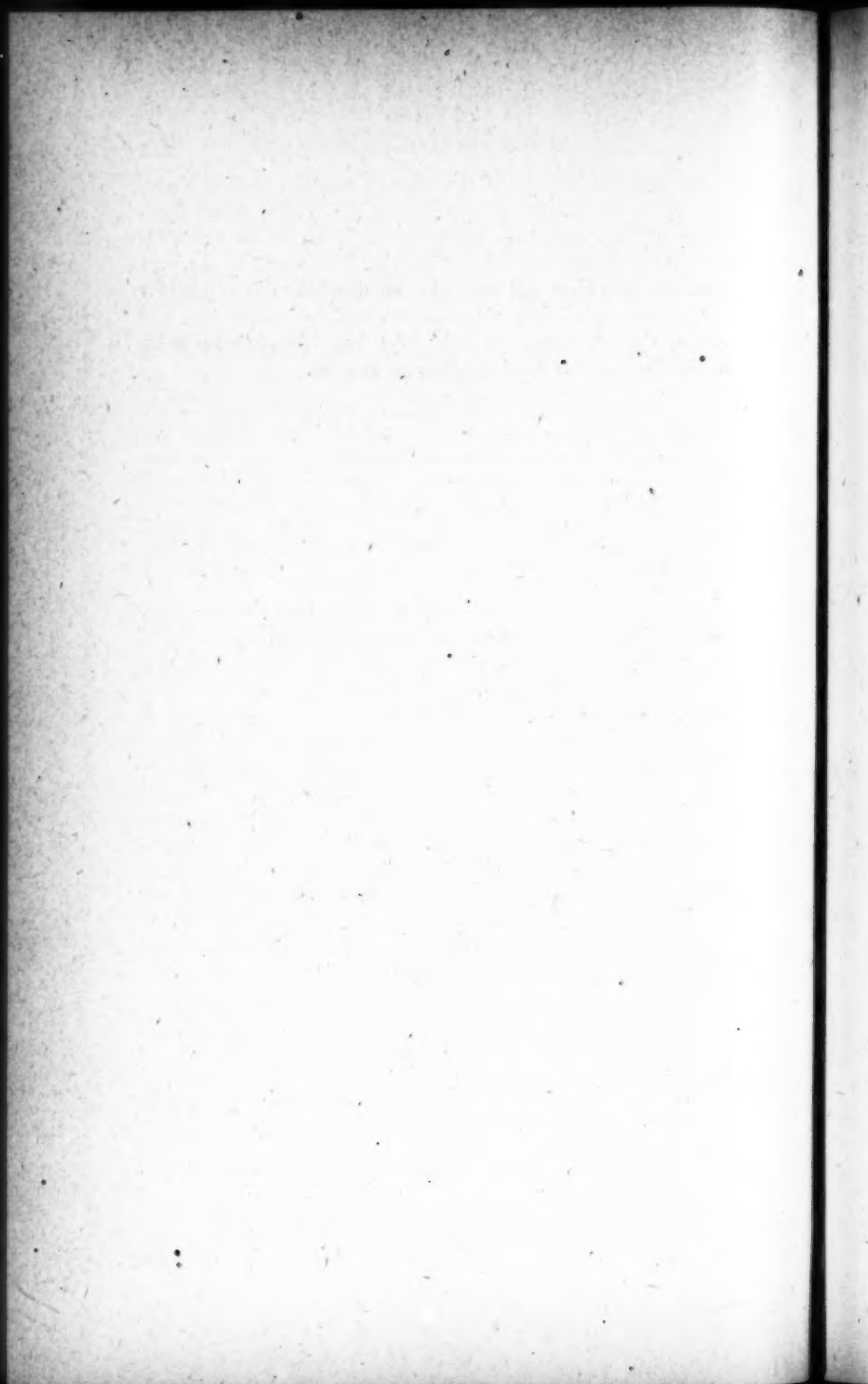
C. W. PICKERING, *Capt. U. S. Navy.*

CHARLES D. ROBINSON, *Wisconsin.*

JOHN W. HARRIS, *Missouri.*

HENRY BARNARD, *Connecticut.*

The aggregate expense of the Military Academy at West Point, and the Naval Academy at Annapolis, to the country, is not represented by the specific sums which appear in the annual appropriation for the military and naval service, but is increased by the large sums paid to officers and men who are detailed to these posts for police, instructional, and other purposes of these institutions. The cost to the government of each cadet from his admission to his graduation in either Academy, exceeds \$10,000.



NAVAL CONSTRUCTION AND ENGINEERING.

Under authority of an Act of Congress (July 4, 1864), the Secretary of the Navy, in 1865, made provision at Annapolis for a course of instruction for a class of Assistant-Engineers, composed of persons admitted on competitive examination, many of whom had secured a preliminary scientific training, and all of whom gave evidence of aptitude for such occupation and of having had experience in the fabrication of steam machinery. There was every indication of a special school for this department of the naval service, when the enterprise was suspended; but to be revived under the following Regulations, issued by Secretary Robeson, April 4, 1871:

REGULATIONS FOR THE APPOINTMENT OF CADET ENGINEERS.

I. In pursuance of the third and fourth sections of an act passed at the first session of the 38th Congress, approved July 4, 1864, "*To authorize the Secretary of the Navy to provide for the education of Naval Constructors and Engineers, and for other purposes*," and of the second section of an act passed at the first session of the 39th Congress, approved March 2, 1867, entitled, "*An Act to amend certain acts in relation to the Navy*," applications will be received by the Navy Department for the appointment of Cadet Engineers.

II. The application is to be addressed to the Secretary of the Navy, and can be made by the candidate, or by any person for him, and his name will be placed on the register. The registry of a name gives no assurance of an appointment, and no preference will be given in the selection to priority of application.

III. The number of Cadet Engineers is limited by law to fifty. The candidate must be not less than eighteen nor more than twenty-two years of age; he will be required to certify *on honor* to his precise age, to the Academic Board, previous to his examination, and no one will be examined who is over or under the prescribed age. His application must be accompanied by satisfactory evidence of moral character and health, with information regarding date of birth and educational advantages hitherto enjoyed. Candidates who receive permission will present themselves to the Superintendent of the Naval Academy between the 15th and 25th of September for examination as to their qualifications.

IV. The course of study will comprise two academic years. All Cadets who graduate will be warranted as Assistant Engineers in the Navy. The pay of a Cadet Engineer is the same as that of a Cadet Midshipman.

V. The academic examination previous to appointment will be on the following subjects, namely: *Arithmetic*: the candidate will be examined in numeration and the addition, subtraction, multiplication, and division of whole numbers, and of vulgar and decimal fractions; in reduction; in proportion or rule of three, direct and inverse; extraction of square and cube roots. In *Algebra*, (Boardon's,) through equations of the first degree. In *Geometry*, (Davies' Legendre,) through the plane figures. *Rudimentary Natural Philosophy*. *Reading*: he must read clearly and intelligibly from any English narrative work, as, for example, Bancroft's History of the United States. In *Writing and Spelling*: he must write from dictation, in a legible hand, and spell with correctness, both orally and in writing. In *English Grammar* and *English Composition* he will be examined as to the parts of speech, the rules connected therewith, and the elementary construction of sentences, and will be required to write such original paragraphs as will show that he has a proper knowledge of the subject. The candidate will also be required to exhibit a fair degree of proficiency in pencil-sketching, and to produce satisfactory evidence of mechanical aptitude. Can-

didates who possess greatest skill and experience in the practical knowledge of machinery, other qualifications being equal, shall have precedence for admission.

VI. Any of the following conditions will be sufficient to reject a candidate.

Feeble constitution, permanently impaired general health, decided cachexia, all chronic diseases or injuries that permanently impair efficiency, viz :

1. Infectious disorders.
2. Weak or disordered intellect.
3. Unnatural curvature of spine.
4. Epilepsy, or other convulsion, within five years.
5. Chronic impaired vision, or chronic disease of the organs of vision.
6. Great permanent hardness of hearing, or chronic disease of the ears.
7. Loss or decay of teeth to such an extent as to interfere with digestion and impair health.
8. Impediment of speech to such an extent as to impair efficiency in the performance of duty.

9. Decided indications of liability to pulmonary disease.

10. Permanent inefficiency of either of the extremities.

11. Hernia.

12. Incurable sarcocele, hydrocele, fistula, stricture, or hemorrhoids.

13. Large varicose veins of lower limbs. Chronic ulcers.

14. Attention will also be paid to the stature of the candidate, and no one manifestly undersized for his age will be received into the Academy. In case of doubt about the physical condition of the candidate any marked deviation from the usual standard of height will add materially to the consideration for rejection.

15. The Board will exercise a proper discretion in the application of the above conditions to each case, rejecting no candidate who is likely to be efficient in the service, and admitting no one who is likely to prove physically inefficient.

VII. If both these examinations result favorably, the candidate will receive an appointment as a Cadet Engineer, become an inmate of the Academy, and will be allowed his actual and necessary traveling expenses from his residence to the Naval Academy, and be required to sign articles by which he will bind himself to serve in the United States Navy six years, (including his term of probation at the Naval Academy,) unless sooner discharged. If, on the contrary, he shall not pass both of these examinations, he will receive neither an appointment nor his traveling expenses, nor can he have the privilege of another examination for admission to the same class unless recommended by the Board.

VIII. When candidates shall have passed the required examinations, and been admitted as members of the Academy, they must immediately furnish themselves with the following articles, viz :

One navy-blue uniform suit,	One pair of blankets,
One fatigue suit,	One bed cover or spread,
One navy-blue uniform cap,	Two pairs of sheets,
One uniform overcoat,	Four pillow cases,
Ten pairs of white pants,	Six towels,
Four white vests,	Two pairs of shoes or boots,
Six white shirts,	One hair-brush,
Six pairs of socks,	One tooth-brush,
Four pairs of drawers,	One clothes-brush,
Six pocket handkerchiefs,	One coarse comb for the hair,
One black silk handkerchief or stock,	One fine comb for the hair,
One mattress,	One tumbler or mug, and
One pillow,	One thread and needle case.

Room-mates will jointly procure, for their common use, one looking-glass, one wash-basin, one water-pail, one slop-bucket, and one broom. These articles may be obtained from the store-keeper of good quality and at fair prices.

IX. Each Cadet Engineer must, on admission, deposit with the paymaster the sum of seventy-five dollars, for which he will be credited on the books of that officer, to be expended by direction of the Superintendent for the purchase of text-books and other authorized articles besides those above enumerated.

X. While at the Academy the Cadets will be examined, from time to time, according to the regulations prescribed by the Navy Department; and if found deficient at any examination, or dismissed for misconduct, they cannot, by law, be continued in the Academy or Naval service, except upon recommendation of the Academic Board.

XI. A Cadet Engineer who voluntarily resigns his appointment will be required to refund the amount paid him for traveling expenses.

INSTRUCTION, TRAINING AND PROMOTION OF SEAMEN.

INTRODUCTION.

UNDER the constitutional powers "to regulate commerce with foreign nations and among the several States," and "to provide and maintain a navy," Congress, it is believed, can do more than is now done to provide both the military and commercial marine with intelligent, hardy and skillful sailors, as well as mates and captains, and to elevate the position of the whole seamen class.

The frightful accidents from explosions caused by badly constructed, or worn out steam-boilers, led to a system of national inspection which has done something to diminish the loss of life and property from this source, in vessels engaged in commerce on the ocean or our inland waters—but a system of instruction, examination, and promotion, under national authority, with national aid and the coöperation of the mercantile community, of all persons intrusted with the command and navigation of all vessels, registered as national shipping, would put an end to all that class of disasters to life and property which is now attributable to *ignorance and want of experience*—and which is regarded by underwriters as much the largest portion of all marine disasters.

The necessity of doing something led to the establishment of the naval apprentice system, under the Act of March 2, 1837.

The original trial was not inaugurated under favorable conditions, and was prematurely abandoned, under the economical action of Congress which compelled the department to elect between men and boys for its arduous service. In 1864 the system was revived by Secretary Welles, a vessel was placed under the command of a competent officer, and a promising class of boys, after a preliminary examination were enlisted, and the work of their instruction was begun by training them in all the details of a sailor's duty at sea. The Secretary in his Report for 1866, expressed himself hopeful of the results—but urged Congress to further legislation, to make the system attractive, by holding out to the most deserving members of the class, appointments to the Naval Academy, and a retiring pension after twenty years' service. His suggestions were not heeded, and under the limitations of the Act of 1866 the trial failed.

Commodore Jenkins, Chief of the Bureau of Navigation, having cognizance of Naval Apprentices, in his Report for 1866, remarks:

A judicious naval apprentice system will secure to the navy every year, after the first enlisted boys are thoroughly trained and educated, a sufficient number of well-disciplined and better instructed seamen to give tone and character to the crews of our vessels of war than heretofore, and if the enlistments were unlimited it would require only a few years to provide all the seamen necessary for a formidable naval peace establishment.

But it is not the navy alone that is or ought to be greatly interested in the success of the naval apprentice system. Every ship-owner and shipper in the country will be directly or indirectly benefited as well as the navy. Many of the apprentices will, at the expiration of their apprenticeship, seek service on board of merchant vessels, where the advantages of their previous training and education will be felt.

If there were training-ships in every port of the United States for apprentices to the sea service, and the apprentices, after being taught the rudiments of an English education and all the seamanship that could be taught on board of a vessel in port, were sent on long sea voyages, the seamen of the country would soon become more elevated in character than they are at present, and ship-owners would realize the importance of cherishing and protecting a valuable class of our countrymen who are now left to the tender mercies of hard-hearted landlords, crimps, and runners.

It is a great mistake to suppose that steam vessels can be managed well by landmen at sea. The terrible shipwrecks, loss of numbers of individuals, and of millions of dollars' worth of property annually on the ocean, is in the main attributable to bad management, ignorance, and want of experience of those in charge of the vessels. It is as necessary that sea steamers should be officered and manned by expert seamen as it was in former times for clipper and other sailing vessels. A good knowledge of seamanship is only to be acquired by a long apprenticeship; nor does the ability to navigate a vessel from one port to another make a man a seaman. There is no vocation, profession, or calling which requires a more varied knowledge and a greater experience than that of an expert seaman. It is not sufficient that he should know how to knot and splice a rope, to reef and furl a sail, to take his trick at the helm, or to give correct soundings in heaving the lead. He must be a good judge of the appearances of the weather, know how to lay his vessel to and under what canvas for safety, on what tack to put his vessel to avoid the strength of the approaching gale or hurricane, when to run and when to lie to, and he must be fertile in resources to save his vessel in case of danger or disaster at sea. The expert seaman is a man full of resources, and ever ready to turn his knowledge and experience to good account; but such is not the estimate of him by those who only know him as an outcast of society, without friends and without influence.

As education and careful training elevate those who are engaged in the different pursuits on shore, the same means, if judiciously employed, will elevate and make useful and respectable in their sphere that much neglected and greatly oppressed class of our fellow-citizens—the American sailor.

Navigation Schools for the Mercantile Marine.

Whatever may be the success of still another trial of the apprentice system to secure a supply of trained seamen for the Navy, the experience of all other countries is decidedly in favor of a liberal system of Navigation Schools, as well as an efficient system of registration, examination, and certificates of competency and of service, administered under national inspection and with pecuniary aid, and under the local management of merchants, ship-owners, and underwriters, for the commercial marine.

GENERAL REVIEW OF MILITARY EDUCATION.

I. NAVAL SCHOOLS AND EDUCATION.

WE can not better introduce the conclusions to which this study of the subject has brought us, than by giving a few extracts from the many communications, which the recent agitation of naval education in England has elicited.

Proposed Improvements in Naval Education in England.

In 1869, the alternative was offered, on their own petition, to the 2,710 disabled seamen, who resided in the truly magnificent Hospital at Greenwich, on the Thames, which the national gratitude had set apart for their accommodation, when no longer able from wounds, age, or other infirmities to serve under "the meteor flag" of England—to continue there at the expense of the government, or draw their pensions and spend it in their own way, among their friends in their old homes, or wherever they fancied; only 31 elected to remain—and these were too feeble to leave, or had outlived their friends. The old Hospital infirmary, a large detached building, was granted by the Admiralty to the Seamen's Hospital Society for the benefit of the mercantile marine; but the bulk of that immense pile—which is covered in by seven acres of roof, and whose domes and colonnades were designed by Sir Christopher Wren, and erected at a cost, from first to last, of not less than a million sterling—full of historic associations as the birthplace of Queen Elizabeth, and the residence of two dynasties of English kings, and the greater Lord Protector Oliver Cromwell, and for two centuries the home of the British Navy—for nearly two years has stood vacant. The TIMES, in an editorial of September 13, 1871, renews a suggestion made at the time the system of out pensions was under discussion, to continue its use for the Navy.

It is almost two years since we hazarded the suggestion that it should be converted into a Naval University. We used the term "University" in the sense of a collective institution, embracing several separate Colleges adapted to a similar purpose. We pointed out how inadequate in extent and in range of education is the present Royal Naval College at Portsmouth, the only institution we possess for supplying to Naval Officers what is termed a "higher education." We also reminded our readers that the education of our Naval Cadets between the ages of 12 and 14 is now carried on in a School-ship, which, from the nature of things, must have many disadvantages in comparison with a building of ample space on the brink of a great river and on the border of a

Royal Park. We showed that there was already a great Charity-School in the rear of the Hospital, and supported by its funds, for the gratuitous education of 800 children of poor sailors; and we reckoned that the Hospital would still supply ample accommodation for a scheme, suggested to us on high authority, for furnishing at cost price to the children of seamen of all grades in the Navy and Commercial Marine, an education in English, French, the elements of science, and the ordinary rudiments of instruction.

In the year 1870 the Admiralty appointed a committee on "the Higher Education of Naval Officers," and directed them to consider whether it was desirable to limit the place of study to the College at Portsmouth, or whether the vacant buildings at Greenwich could be utilized for the purposes of education. The reported evidence of the Committee revealed a lamentable want of scientific knowledge in the naval profession. The witnesses were agreed in stating that few half-pay Officers had knowledge enough to study with advantage after the age of 30, and that few could, with advantage to the service and themselves, be spared to study before the age of 30. It was stated by the Mathematical Master that Commanders and Captains come to the College very badly prepared, and that "some come who are unable to work a decimal fraction." They come, as the College is now organized, exclusively for scientific study, in which Mathematics are a necessity, and yet are destitute of the most elementary preparation. Of course there are a few brilliant exceptions, but the scientific attainments of the profession as a body appear to be deplorably low.

In preparing a scheme for the improvement of what is so modestly termed "the higher education" of Naval Officers, the Committee proposed to add to the voluntary subjects of study a considerable number of practical pursuits. They proposed, under the advice of the late Chief Constructor of the Navy, to add both a short and a long course in Naval Architecture, in which there is at present absolutely no instruction given to Naval Officers. Such an education was supplied between the years 1806 and 1821, but since the latter year it has been altogether ignored and discouraged. It would require considerable space for the exhibition of models, and no sufficient room exists for it in the present College in Portsmouth Dockyard. The Committee proposed to furnish instruction, as now, in Steam, Mathematics, Nautical Astronomy, and Field Fortification, but to add facilities for the study of Languages, Chemistry, including Metallurgy, Geology, Mineralogy, and Naval Tactics. The want of a knowledge of languages in the British Navy was signally illustrated on a somewhat recent occasion, when the French iron-clad fleet visited Spithead, and upon our Admiral signalling for all officers who could speak French to come on board the Flagship, only one officer in the Channel Fleet was able to respond to the summons. The want of a scientific knowledge of the principles of naval architecture has prevented of late many skilled seamen of the Royal Navy from contributing useful and practicable suggestions to the discussions on our iron-clad ship-building. The Committee seem to have thought that it would not be practicable to make a year's study in the Naval College in peace time compulsory for every sub-lieutenant, though distinguished officers, like Admiral Sir Alexander Milne, gave evidence in favor of it. But, apart from this abundant source for supplying students, it was anticipated that an extension of the education would attract a large increase of scholars; and on general grounds, quite distinct from the accommodation, one-half of the Committee, including the Director of Naval Education, were strongly in favor of establishing the College at Greenwich. Fortified by this concurrence of authority, we recommend again to the consideration of the Government the scheme of a Naval University as the best mode of re-peopling that ancient and now vacant Hospital.

This "leader" of the Times was followed in the issue for Sept. 20, by a communication from the eminent ship-builder E. J. Reed, who was for several years at the head of the Department of Naval Construction—with reasons for immediately widening and raising the education of naval officers of all classes.

The absence of everything like a comprehensive organization for imparting

to them the knowledge necessary in these days is truly deplorable, and is made the more so by the very fact that our officers are themselves well aware of the extreme defectiveness of their training in many branches of knowledge which would be most valuable to them, and exhibit the strongest desire to supplement that training by every available means. I have had many occasions of observing this during the last few years; not the least striking of them being the publication of my book on *Shipbuilding in Iron and Steel*, which, although a purely technical and professional book, was eagerly procured and studied by a very large number of naval officers, who, as you justly state, are now left absolutely without any official instruction in naval architecture. When in Russia this year I found elaborate means and appliances for instructing young officers in all the great features of practical shipbuilding, as well as in the general principles of naval design, and I had the opportunity of examining a large model of an iron-clad ship which was being constructed by these young naval officers; while the shipbuilding and engineering officers of the Russian service have one entire side of the vast building which accommodates the Admiralty branches, wholly devoted to their instruction. I have not yet seen the naval training schools of Germany, but I have had several opportunities of conferring on shipbuilding questions with the naval officers of that country, and I can state with perfect confidence that they possess a most intimate acquaintance with even the latest methods of naval design and construction, and obviously have had a careful training in the principles of naval architecture and the details of shipbuilding. How much this training contributes to the efficiency of naval commanders and other officers I need not say.

Mr. Reed dwells on the total absence of even an attempt to instruct naval officers of all ranks in the department of construction.

Even our warrant officers, the "carpenters" of the Navy, whose duty it is to keep our Navy in repair at sea, and to take instant measures for saving our ships from the effects of injuries sustained by collisions, groundings, or during action—even these officers are subjected to no special and organized training whatever, and are often put on board ship, in responsible charge of the repairing staff, without any knowledge whatever of the construction of their vessel.

I knew so well that the whole class of naval "carpenters" have for years been anxious to obtain a better training for their very responsible duty, that I made a vigorous effort to be allowed to organize a system by which every carpenter of the service should be carefully instructed in iron shipbuilding, and as carefully selected for particular ships on account of his fitness for the duty; but some tradition about warrant officers being "executive officers," and therefore not under the Chief Constructor of the Navy, and also, I fear, some jealousy of the patronage of such appointments passing into new hands, effectually barred my progress, and imposed conditions under which it was not possible to give effect to my wishes.

I do not think I shall go beyond the truth if I say that other warrant officers are as deficient of suitable training as carpenters. I have certainly known of more than one instance in which the machinery by which our great modern guns are worked at sea has been so imperfectly understood that the "breaks" which are intended to control them have been "greased;" and no doubt a war would develop sad consequences of the enforced ignorance of our gunners.

But let it not be supposed that I advocate the instruction of warrant officers alone in the principles and practice of shipbuilding; it is in my judgment pressingly desirable that the whole class of executive officers should be afforded a certain amount of training in these subjects, and a far ampler training than they now receive in many other subjects also. The Navy suffers very much, even in peace times, from the want of a more liberal training on the part of its officers, as they themselves well know; and I am thoroughly persuaded that in a time of war we shall have to make great sacrifices on account of our neglect in this respect. Many unwise things are done, and many unwise reports are written, because of the want of fuller scientific and technical information on the part of naval officers; and I do not hesitate to say that during my tenure of the Chief Constructorship serious evils arose in my own department from the outside pressure of the uninformed.

Mr. Reed would locate the Naval University at Greenwich.

Such a University must almost of a necessity be metropolitan. All the provincial Government Schools of Naval Architecture in this country have failed, and always must fail, because the metropolis alone can supply the necessary professors for class education chiefly of a scientific character; and the same is even more true of the present case. All the civil members of the late Admiralty Committee on the higher education of naval officers concurred in this view, none more strongly, I believe, than the present Director of Admiralty Education, Dr. Joseph Woolley, who is undoubtedly at once the most experienced and most enlightened authority alive as regards all questions of naval training. And there is this very strong further reason for making this University metropolitan—viz., that one of the most fruitful and valuable results to be anticipated from a more liberal and enlarged education of our naval officers is the release of the service from those thousand and one Old World prejudices which cramp the action and spirit of the service in these modern days, when other nations are bringing their most free and cultivated minds to bear upon naval warfare; and to found a University in a port where the present traditions and habits of thought of the service have the greatest force, would be to place a fatal stumbling block at the very threshold of the work; and if the metropolis is to be the home of the University there can not be a doubt about the superior eligibility of Greenwich. There the magnificent college already stands, with its empty halls, inviting the Government to devote them to some great national and naval object. It is within easy reach of London, professors and teachers; it is in the neighborhood of great shipbuilding and marine engine-making establishments, and also of Chatham Dockyard. It is on the banks of our noblest river, and on the verge of the open country, so that every form of healthful recreation would be available for the students. It also affords ample internal space for all those laboratories, model rooms, lecture rooms, and other apartments, which could only be secured on a sufficient scale at a seaport by a large outlay of money. And, above all, it affords the readiest, as well as the best, means of entering upon a much too long-neglected undertaking.

In the same issue (Sept. 20), the Times had a leader on the subject, from which we take a few paragraphs.

It is certainly discouraging for a nation which has hitherto held, and which means to keep, the first place in the world as a naval Power to find that in systematic training Russia and Germany are dangerously surpassing us. No doubt in the raw material of a navy we can compete fearlessly with any country on the face of the earth; our sailors can not be matched for enterprise, resolution, and discipline, nor can our captains, in spite of some late disasters, be out-mailed or out-manceuvred by any who sail under foreign flags. But we must not forget that war on the seas, like war on land, is year by year becoming more and more a scientific pursuit. Our magnificent iron-clad fleet, in which Mr. Reed feels justly a parental interest, is too precious a possession to be intrusted to men who do not know how to use so two-edged an instrument. But how should our naval officers know how to manage an iron-clad ship? They are taught nothing about the construction of these triumphs of modern science; they do not, as a rule, possess even the elementary knowledge which would enable them to commence the study of the subject.

Whether the unequalled advantages offered by Greenwich Hospital be turned to account or some more expensive method be adopted by a Government which pins its credit on economy, the necessity of providing for the education of naval officers can no longer be ignored. Not to speak of the absolute absurdity of sending iron-clads to sea in charge of officers who know no more of the construction of an iron-clad than they know of the latest improvements in cotton-spinning machinery, it is obvious that a system under which men whose business is to navigate costly vessels of war, are sent to their work without knowing even the elements of mathematics, must sooner or later result in a disastrous collapse. It may be a question whether such has not been the case already,—whether the recent mischances in the conduct at sea of some of our finest vessels may not be traceable to the imperfect education of the officers.

When other nations are giving their sailors scientific teaching, and when we are expending gigantic sums on the construction of a Navy which must be handled in accordance with scientific principles, it appears absurd, or worse, to allow the commanders and the officers of our iron-clads to go to sea without the slightest guarantee for their knowledge of the peculiar conditions under which one of our modern monster ships is to be managed. If an iron-clad happens, as we may presume, considering what has lately happened, is not impossible, to strike upon a rock or otherwise seriously to damage herself at a distance from home dockyards, the chances are that no one on board, from the captain down to the carpenter, will know how to repair the damage.

To the urgent demand for more scientific knowledge of naval construction, Admiral Henry J. Rouse interposes a plea for more seamanship, discipline, and education afloat. In the Times for Sept. 28, the bluff Admiral says, rather bluntly:

I was alive to the want of seamanship and to the neglect of a naval education from the moment a midshipman left his school and was appointed to a steamer; but I always flattered myself there was one redeeming point—namely—gunnery—in which the officers of the present day had a wonderful preëminence over the old school. How is the proposed college to ameliorate this state of things? Will it make the young officers engineers when on board ship? They are not allowed to interfere with the engineer, who is, in fact, the commanding officer. Will warrant officers, carpenters, and gunners, be educated there? And in answer to Mr. Reed relying upon the carpenter in the event of a ship grounding (not an uncommon occurrence), we look to the captain to lay out his anchors, lighten his ship and heave her off by purchase over purchase; we do not consult the carpenter. Mr. Reed says,—“The men who will have to design for our Navy will never be free to design the best ships which can be provided until an improved education of the whole naval service unbinds the hands of the *scientific servants* of the Admiralty.”

Who are the scientific servants? Are the men who designed the iron-bound monsters at the expense of half a million each; which have every bad quality, which can neither sail, wear, nor stay better than a coal barge, and which roll and pitch like maniacs owing to the weight of their armor, and which are certain to founder if called upon to face a very heavy gale? Are the servants scientific who stow their ballast on empty cells, thereby preventing a ship righting herself if she heels over 33 deg. under canvas, and which makes her capsize keel uppermost, according to the simple law of gravitation which impels the vacuum to the surface? Was the servant scientific who reduced a ship's ballast 300 tons, and put a corresponding weight of iron on the upper works, boasting he had retained the same line of immersion without calculating the loss of stability, and did not the Admiralty listen to him like countrymen to a mountebank, and reward him with a grant of money?

If a Greenwich College could diminish the frightful excesses and expenditure in the last eight years in the building department, for which the House of Commons demanded an investigation, which was checkmated by sending a distinguished admiral to the Cape of Good Hope; if it could instruct the scientific servants in the mysteries of their vocation, and convert the simple landmen in Charing-cross into naval oracles; if it could make young officers seamen by inspiration, then I should agree with Mr. Reed that a Greenwich College would be most desirable.

As for the junior officers nothing but a sailing ship can educate a seaman. If a midshipman loses the precious years from 14 to 17 in a steamer he will be too old and proud to learn his profession, and when later in life he is sent to take command of a prize ship under canvas in war time he will look very foolish in half a gale of wind.

If any man will take the trouble to think, he must be convinced that no ship of any size, no armor *clypet septemplexis*, no guns of 25 tons can compete with an iron-cased steam ram of about 1,200 tons, invulnerable, bomb-proof, which would put five feet of cold steel under a ship's water line going 14 miles per hour. We are now building gunboats to protect the coast. One of Mr. Drake's steam rams of about 300 tons, without a gun mounted, would destroy a dozen

of them. In the next naval action history will be repeated. Romans, Carthaginians, and again the *naves rostratae*, alias the Steam Ram, will carry the day. It is wonderful that the Admiralty for the last twenty years have been building their hogs in armor to defy shot and shell, ignoring the terrible attack of this superior power. It is never too late to mend. To save enormous sums of money and a waste of coal we ought to pay off all our useless monsters, and during peace to commission small ships with auxiliary screws, never to burn a coal except in a case of necessity; and then, by keeping squadrons at sea, we might improve our discipline, our seamanship, and *esprit de corps*.

The letter of Admiral Rouse was accompanied by a leader in the Times of the same date from which we take a few paragraphs.

The spirit of an English sailor of the old school, with his bluff, outspoken, uncompromising detestation of change, and his unflinching belief that all that has been was right, is something to wonder at and even admire, if we should not care to imitate it, in these days of perpetual motion. He has observed, as we all have, with shame and misgiving, that while the cost of our vast iron-clad vessels of war is growing yearly greater, the officers of the new generation who are to be intrusted with the handling of these expensive monsters are not comparable for practical skill and shiftiness with those of Admiral Rouse's contemporaries who dominated the seas in sailing frigates in the days before either steam or ship-armor was devised. In his perception of the defects of our present system the Admiral does not stand alone; it is condemned by the ablest officers who are now in command of our fleets, by the eminent engineers who construct them—unfortunately, with still more eloquent urgency by the voice of our recent naval annals. The misadventures of the Captain, the Psyche, and the Agincourt, not to mention less serious mishaps, have startled us all, and the seamanship of the British Navy has come to be gravely questioned.

Let us compare Admiral Rouse's remedy with Mr. Reed's.

The latter is dwelling on the custom of sending young boys to sea with necessarily imperfect training, and of promoting them to the higher grades, though in the meantime they have had no opportunities of scientific instruction. He asserts the consequence is that very few of the officers who command our costly iron-clads at the present day know any thing of the construction or the qualities of those gigantic boating masses. Admiral Rouse admits this fully, but he superadds a charge at least as serious; he alleges that few or none of our modern naval officers who spend the years of their apprenticeship to the sea on board a steamer, and who "worship the boiler whenever they are in a scrape," do know or can know any thing of real seamanship. Mr. Reed says that the study of the principles of shipbuilding is unknown among the officers of our Navy, and that accordingly, few of them can handle an iron-clad. Admiral Rouse says that the study of the winds and waves is neglected by them, and that not many of them can sail a frigate. Mr. Reed demands a Naval University to teach officers the theory of navigation as applied to the vast masses of iron now afloat under our flag. Admiral Rouse would get rid of these "useless monsters" altogether, would, during peace, commission small "ships with auxiliary screws," and "never burn a coal except in case of necessity." Here we have the ancient and the modern spirit in contrast and juxtaposition. The former, obstinate and often illogical, but with a certain rude and not unjustified faith in practice, deserves our respect, for it was this spirit which won us, in old times, our naval supremacy. The latter may be over-bold and presumptuously contemptuous of the past and all its belongings; but it is the spirit of progress, and on its guidance we have to depend for the maintenance of the renown we achieved in the earlier and darker time.

On the 20th of March, 1871, Capt. James G. Goodenough, R. N., read a paper before the Royal United Service Institute, on the Preliminary Education of Naval Officers, from which we make extracts.

I should be guilty of an absurd and forced indifference to what is passing around me if I were not to say that an impression now exists very generally in the service, that the views which find most favor with regard to the train-

ing of the officers of Her Majesty's Navy is, that the naval officer should be taught young; that he should be made to devote himself to the details, and nothing but details of his profession from boyhood to youth, and from youth to middle age, and that somewhere behind middle age and old age, he should be deemed to be warrant, and be thrown away a pensioner on the country's gratitude, unfit even to have a voice in the guidance of the affairs of the service to which he may have been an ornament. This impression is doing much harm in all directions.

It is weakening the desire for knowledge and self-improvement in naval officers; it is tending to narrow and circumscribe the idea of responsibility of a naval commander for all things coming within his ken, and to lower his conception of his own position from that of a representative of his country in all parts of the world, an agent of her policy, and a guardian of her commerce, to that of being a mere executing tool, whose only argument is force.

The warning which I should give, and it contains the whole case, is this,—that while all other circumstances of life at sea have changed considerably in the last thirty years, the preliminary training of our officers has not changed in its main features. It is not merely that our material, whether in ships or guns, steamships or canvas, has changed. It is not only that our material has become far more complicated than of yore. If that alone were the case, the system of a former age might supplant the wants of the day. No! the change whose bearing we have failed to acknowledge, even though we may have perceived it, is this, that while formerly the conduct of ships at sea, their discipline, and the handling of their material generally, was based on the experience obtained in the practical individual lives from early years, and on an acquaintance with external phenomena and internal details, which were not reduced to laws or elevated into systems; now, we do possess rules and laws, which greatly reduce the value, if they do not quite supersede, the practical experience of a single life. In every one of the varied practical duties of a sea officer, this is the case, whether in navigation or in discipline, in artillery or in manœuvring; and I say that this constitutes the great change in a sea life to which we have made no corresponding advance. I say that although those laws and systems exist, we still continue to let the details which they include be painfully and only practically acquired by experience, instead of methodically teaching the principles on which they are based.

The principles on which I consider that that education should rest are these: *First*, that a distinction should be made between the period of education and that of special training. *Second*, that special training should be the business of the Government, while education should be left to the care of the parents, at the ordinary schools of the country. *Third*, that the handling of ships' sails and boats, and the principles of command should be methodically taught, instead of, as at present, being left to chance observations and the accidents of service. *Fourth*, that the young officers under training in schoolships should have no command, except over each other, and should count no sea time; and that on entering the service afloat in sea-going ships, they should become at once, in some measure, responsible officers, though liable to future examinations, and to produce evidence of having done work after leaving the training-ships. *Fifth*, that in order to discourage cramming, all entrance examinations should be confined, as far as possible, to the subject of study at advanced public schools, and that every candidate should be required to bring with him certificates of a year's good conduct from his last school.

I wish to see a distinction made between the education and the special training of naval officers. I do not pretend to give the precise age at which this distinction should be made. It will necessarily differ with different boys, and I would therefore have a two years' limit to the age of entry instead of one. My opinion is, that special training should begin at from 14 to 16, and that it should be continued from that age for three years; that is, from an average of 15 to an average of 18 in the college and sea-going training ships.

I should wish young officers to proceed thence to the ordinary service afloat, and after two years' service in a sea-going ship to be admitted to pass an examination for lieutenants.

The examination for entry, which under the system I propose, would be at the average age of 15, should take place in November of each year, and should

be arranged, as far as possible, so as to comprise subjects which do not require special cramming, but are taught generally in our public schools, omitting some, such as Greek, of which no further use or notice would be made in their future career, and substituting French, or another modern language in lieu.

The college would then open for the cadets on the 1st of February, and and while indoor studies of navigation, nautical astronomy and modern languages occupied the mornings, the afternoons should be devoted to practical seamanship until the first of May, when they should embark in a corvette, especially set apart for their instruction, until August.

During these four months they should perform every practical duty of their profession with their own hands, under instruction, with plenty of time, and with patient, steady instructors, and at the end of their cruise, after an inspection by the governor of the college, they should strip and clear their vessel before proceeding on a summer holiday.

During the cruise they should not only learn to take and work their own observations for the position of the ship by the ordinary known methods, but should also study the pilotage of the coast of England, whenever visited.

After the vacation they should again rig their vessel, and until the end of October should have instruction in rigging, masting, and so on, while the weather permitted, as well as continuing to exercise in boats. November and December being devoted to indoor studies and examination. This would complete the first year of training.

The second year would begin as the first, with indoor studies in the morning, the advanced seamanship class of the afternoon, alternating with gunnery instruction classes until May, when the second class would embark in a steam corvette, and in addition to the study of seamanship, as in the first year, would join that of steam machinery. While the cruise of the first year would have been on board a sailing corvette, and on the south coast of England generally, that of the second year should have been extended to the coasts of the United Kingdom and western coast of Europe; and while the sailing corvette should be manned by steady old seamen, and no attempt should be made at quickness of manoeuvre, the steam corvette for the second year should be manned by active young trained able seamen, and all manoeuvres should be performed together, as in actual practice in man-of-war, the young cadets under training working a mast.

At the end of this cruise, they would not only strip their vessel, but would also take to pieces the principal parts of the machinery, before the summer holidays and after inspection.

On recommencement of term in October, indoor studies should again be taken up, and the final examination for the rank of midshipmen should take place in December, the average age of the young officers being now 17 years.

I should now reassemble the midshipmen on February 1st, either on board the gunnery ships or in a special ship attached to the college, for a three months' course in practical gunnery, after being examined in which, they should be discharged into a full-rigged, full-manned frigate for final instruction in the duties of an officer, under selected captains, commanders, and lieutenants. They should here alternately take the duties of officers of tops, officers of boats, officers in charge of a particular mast, and in rotation as officers of the watch, under the care and guidance of a lieutenant of each watch, while lectures and exercise in manoeuvres of ships and boats, of heavy and field guns, of small-arm drills and landing parties, should be systematically taught them. At the end of this cruise, which should extend to the Mediterranean, an examination in seamanship should take place, and the midshipmen would be discharged into the service afloat, at an average age of 18 years, where they would serve as midshipmen for one year before examination (as now) for sub-lieutenants.

Thus, the whole course of training would be two years at college, and in training corvettes as cadets, and one year's training in practical gunnery, and instruction as an officer in various duties, with the rank of midshipman, performing all the duties of a subordinate officer, at the conclusion of which an examination should take place in all the subjects of the profession, whether at home or abroad. This preliminary education should be followed by the modification of the navigating class, the creation of an examination for the rank of lieutenant, and other changes in rank.

MILITARY EDUCATION IN FRANCE; Part I. of Military Schools and Courses of Instruction in the Science and Art of War in different countries. By Henry Barnard, LL.D., late U. S. Commissioner of Education. Pages 7—276.

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